ASTRONOMICAL SIGNIFICANCE OF INSCRIPTIONS WHILE MAKING GRANTS

Thesis Submitted in Partial fulfillment of the

Degree of Doctor of Philosophy (Ph.D.)

By

V. RAMAMANI

Reg.No: RM12MA19

Under the Guidance of

Dr. N. PANKAJA

DEPARTMENT OF MATHEMATICS

Faculty of Science

SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHAVIDYALAYA

(University established under section 3 of UGC act 1956)

ENATHUR, KANCHIPURAM - 631 561.

NOVEMBER 2017

CERTIFICATE BY THE GUIDE

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N. Pankaja

Date:

Signature of the Guide

(Dr. N. PANKAJA)
M.Sc., M.Phil., Ph.D., P.G.D.C.A.,
Professor and Head (Retd.)
Dept. of Mathematics
Sri Parasakthi College for Women
COURTALLAM

DECLARATION BY THE SCHOLAR

I declare that the thesis entitled "**ASTRONOMICAL SIGNIFICANCE OF INSCRIPTIONS WHILE MAKING GRANTS**" submitted by me for the Degree of Doctor of Philosophy is the record of research work carried out by me during the period from 2009 to 2017 under the guidance of **Dr. N.PANKAJA** and it has not formed the basis for award of any degree, diploma, associate ship, fellowship, title in this or any other university or other similar institutions of higher learning. It is also certified that the thesis / dissertation confirms to the Plagiarism policy of the University.

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Date: **Signature of the Scholar**

Abbreviations

A.R.Ep	-	Annual report on Indian Epigraphy
Ep.Ind	-	Epigraphia Indica
Ep.Carn	-	Epigraphia Carnatica
IPS	-	Inscriptions of Pudukkottai State
IWG	-	Inscriptions of Western Gangas
JASASI	-	Journal of Ancient Sciences and Archaeological Society of India
JAHRS	-	Journal of Andhra Historical Research Society
SII	-	South Indian Inscriptions
TAS	-	Travancore Archaeological Series

ABSTRACT

Inscriptions on stones or copper-plates, which occur in substantial numbers, are the basic source- material for the ancient and medieval history of India. The rulers of south India both coastal and interior areas have paid greater importance to astronomical occurrences like ayanas, eclipses etc., grants have been made by the rulers, chieftain, merchants and individual on this occasions. It is to be noted that auspicious and religious function has been made of these days. Not only do this grants mark specific occasions and their observances but also the reasons for which endowments have been made are recorded in the epigraphs. These grants have been made by the rulers both from their capital as well as from the place of the residence. Most of the grants made on auspicious occasions pertain to the religious purposes. The grants made over to the temples are frequently referred to in the inscriptions. Kings have taken the privilege of making grants on specific occasions as a sort of pariharas in several forms in order to ward off the evil effects. The grants have been made by the kings for their own welfare and for the welfare of the kith and kins and as well for their predecessors. A special attention has been paid by observing these occasions not only by the individuals but also by the temples and temple officials. The astronomical occurrences has been scrupulously followed, they have been done so far with the specific purpose. They give us the pictures about the significance of the astronomical details available but also enable us to understand the chronological sequence of the kings and the events.

I also demonstrate the importance of *statistical* analysis of inscriptional data, of techniques that I introduced into this field of study. Many interesting and important features of ancient and medieval villages can be known from inscriptions, including information to reckon the date of the kings on the basis of the astronomical occurrences i.e., the ayanas, the eclipses, sankramana and sankranti. From the study of the inscriptions of Andhra Pradesh we come to know the astronomical occurrences both in the copper plates as well as in the stone records of the reason concerned. C programming and database is created to facilitate further studies.

Statement of research:

The study is to know as to how far the astronomical details are used to fix the date of the inscription so as to enable the historians to find out the chronology of the kings, the regnal years of the kings, dates of the kings, the importance have been given to the rulers for the coronation of the king. Examine the nature of the gifts made for different purposes on the astronomical occasion of Uttarayana period, Dakshinayana period and understand the importance of solar and lunar eclipses on which the grant was made for several purposes, to know the importance of occasion of festivals and Jupiter movement on which grants has been made for various purposes.

Literature survey:

Mathematics that enables us to understand the Epigraphy and History at large. Many scholars like Sri L.D.SwamiKannuppillai, Kielhorn, Sri N.Sethuraman and others have attempted to reconstruct the chronological history of the king on the basis of the Mathematics. The astronomical details of the kings have been meticulously examined by them by fixing the dates of the kings, and for finalizing the dates of the moments. Sri N.Sethuraman has brought out the significance of the astronomical data for the reconstruction of history. He emphasizes the fact that Epigraphy and Mathematics go hand in hand with each other and forms the main source.

Astronomical details given in epigraph have been studied by Sri N.Sethuraman; Popular Astronomy by V.Thiruvenkatachary, Ancient Indian Astronomy and Eclipses in Indian Astronomy by Dr.S.Balachandra Rao. Epigraphy serves as the main source material for the study of astronomical significance. The primary source material has been consulted from the volumes of the inscriptions like South Indian Inscriptions, Travancore Archaeological series, Inscriptions of Pudukkottai, Inscriptions of Western Ganges, Epigraphia Carnatica, Annual reports on Indian Epigraphy, Epigraphia Indica, Cholas and Pandyas - a mathematical approach by Sri N.Sethuraman. A C program has been compiled to verify the weekdays. A PhP database is created for the datas in order to further facilitate study in this regard.

Research Methodology and tools used:

Data pertaining to astronomical occurrences have been collected, classified and tabulated. Relevant graphs have been prepared for the objectives of my study. In order to examine the nature of the grants made for different purposes for different occasion the researcher has used graph. An inference has been given at the end of the chapters.

Summary of findings:

Inscriptions of Andhra referring to astronomical occurrences are greater in number than in other states like Tamilnadu, Kerala and Karnataka. Andhra people have paid importance to the astronomical occurrences than the people of Tamilnadu and Karnataka.

On observation we noticed that in most of the astronomical occurrences grants were given more in coastal area than in other places, considering the auspicious values of making grants near water bodies like bank of rivers and ocean. The resultant effects of the scorching Sun more felt in the coastal areas particularly in the season of the ayanas.

The astronomical occurrences have been observed in Andhra scrupulously not only at the time of the coronation ceremony but also on the dates of the consecration ceremony of the deities in the temples.

People have followed the movement of the planets while making grants because they have been taken to be the auspicious occasions to observe the ceremonies and rituals. In the case of Kerala the movement of the planet Jupiter has been taken to be favorable for engraving the records because of climatic conditions.

The transit of Pisces (Mina sani) occurred has resulted in the severe famine that made the people free from that place. It is learnt from the inscriptions from 9-10 century in Tamilnadu that the importance has been given with reference to the occurrence of ayanas, eclipses while observing the festivities of the deities and the grant made on such occasions. Also it is true that the conjunctions of the planets have been considered as auspicious occasions by the Tamil people for the feeding of the Vedic scholars etc. The festivities and the observance of astronomical occasions in

Andhra and Tamilnadu resulted in conducting festivals and the growth of different cult deities. It may be inferred from this discussion that the astronomers had the knowledge of predicting the eclipses using a cycle similar to saro cycle.

Therefore, astronomical occurrences have been considered to be auspicious and suitable for a healthy living.

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CHAPTER -1

INTRODUCTION

1.1 INTRODUCTION:

Our ancestors have followed the Indian calendar system based on the position of the planets like Sun, Earth and the Star. Today, it is necessary to know about astronomy in Ancient India in order to understand the Indian approach to Science especially the remarkable achievements of Ancient Indian astronomers. The Hindu calendar (*pañchānga)*, which began as a simple compilation of celestial observations relevant to the contemporary needs of the Vedic times is an abiding symbol of the unbroken continuity of Indian astronomy.

It is interesting to note that the astronomical works like Sūrya Siddhānta and Siddhānta Sirōmani mention the reckonings and specify the particular purpose for which they may be used. In the Chōla records we find both the reckonings used for one and the same purpose, for example the maintenance of perpetual lamps. The German scholars like Kielhorn, Hultzsch, Jacobi and others employed the method of converting the traditional Indian astronomical data into the Gregorian equivalent date with the help of the Indian Ephemeris. The earlier scholars calculated the dates of the inscriptions and also fixed the accession of kings with the help of the regnal years mentioned in the records.

The Hindu rulers counted the regnal years on the basis of their natal star**.** It is the Mathematics that helps us a lot in understanding a epigraphy and history. Scholars like L.D.SwamiKannupillai, Kielhorn, Sri N.Sethuraman and others have proceeded in the right direction with the help of Mathematics in fixing the dates of kings. The accession dates of several ruling families have been worked out with the help of valuable astronomical information provided in the records. In many of the Tamil records the astronomical data furnished are sufficiently satisfactory. The Tamil, Telugu, and Kannada records help us to reconstruct the chronology with less difficulty. People and the rulers have attached significance to astronomical details. An attempt has been made to highlight the astronomical significance that is attached

to Solar and Lunar Eclipses, Uttarāyana and Dakshinā**a**yana, Sankrānti and all Sankramanas.

The aim is to know the regnal years of the kings, to fix the dates of the kings, to know the culture, socio-economic attitude, etc. Ancient people are well versed in astronomical calculations and therefore they had the belief of living with the nature.

Majority of the grants have been made on auspicious occasions like royal crowning ceremony coinciding with astronomical events. The nature of the grants made is in the form of lands, jewels, sheep, cows, cash, grains, coin, goats, etc. The grants were made to the temples and Vedic Scholars for the ostensible purposes like conducting the worship, offerings, and the accrual of the merits and for the welfare of the king and the subjects. Grants have also been made as parihāras (expiations) to forefathers on the day of their natal stars and also to celebrate the occasion of the king's birthday.

The Southern rulers of coastal and interior areas have attached importance to astronomical occurrences like eclipses, ayanas and various *tithis*. It is to be noted that auspicious and religious functions were observed on these days. Not only they gave the grants to mark such events for the accrual of merits but also endowed as *parihāras* in several ways in order to ward off the evil effect of the planets. The grants were made on these occasions by the rulers to the temples and religious institutions like mathas. Special attention has been paid in observing these occasions especially in the temples. The Solar eclipse occurs at the time of the new moon when both sun and moon occupy the same degree of the Zodiac. They are seen as new beginnings being brought about by radical change like a new chapter beginning in one's life.

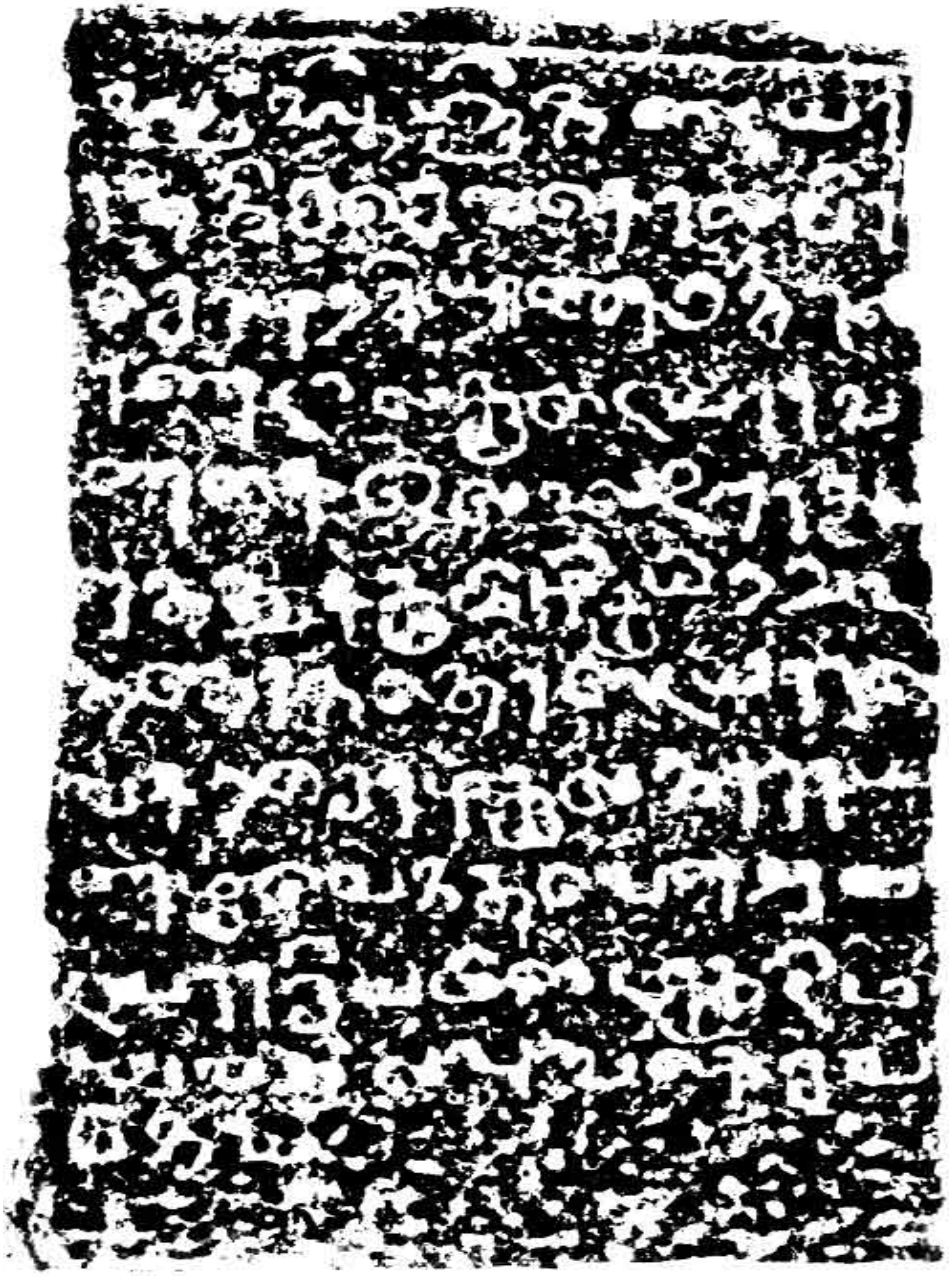
Epigraphy serves the main source material for the study of astronomical details. The astronomical details given in the records have been scrupulously followed so as to understand its significance. These details have far reaching effects in recurring the dates of the kings, provided there is no distortion in furnishing the data. Not only the accession dates of the kings have been reckoned with the help of the astronomical data but also the socio–cultural events that have taken place from time to time are fixed. These records belong to different places in Andhra Pradesh,

Karnataka, Kerala, and Tamilnadu .On prima-facie the records from Andhra Pradesh reveal that the rulers from this region right from the early days have paid greater importance to astronomical occurrences like eclipses, ayanas and various tithis. They have also made liberal grants not only to mark the occasions but also to signify the events. Especially the compensations were offered on these occasions for the merit of the longevity of the elders of the family but they are also to nullify all the evil effects on them. These grants were made by the rulers either in the precincts of the temples or from the place of their camp or permanent residence. While observing the occasions the grants have been made to the temples for various religious and ceremonial purposes.

The study of the inscriptions on stone and copper plate in Andhra Pradesh will reveal astronomical occurrences that occurred. A comparative study of the inscriptions of the coastal and interior Andhra region give us an idea about the customs of the rulers. The people of the coastal Andhra have paid special attention to the observances of astronomical occurrences, for the simple reason that they have a greater belief in the movement of Sun, Moon and the planets. Most of the coronation ceremonies of the royal personages of the early Andhra rulers like the Eastern Chalukyas of Vengi have taken place in the middle of the night. This was not only the customary feature but it was also during that hour the transits of the planets suited to mark the occasions.

Fig : 1.1 Copper Plate Inscription

Fig: 1.2 Stone Inscription



Kielhorn followed the Ephemeris applicable as per the standard Indian calendar that is pañchānga. He fixed the date of the inscriptions with the help of the regnal years and made necessary deductions to fix the commencement year of each king. In all his calculations in order to fix the beginning of the year he applied the Gregorian calendar system in which one year = 365 days. On the other hand the Hindu regnal year seem to consists of 360-380 days. If the king ascends the throne in the month of Makara on the day when the star Revati is current in Sukla paksha then his second year begins in the next year Makara, from the day on which the same Sukla paksha Revati is current. This system is adopted by the Hindu kings for calculating the regnal years.[1]

For correct chronological calculations the deduction must be done as per the Indian calendar system based on the month, paksha and star. For example the birth date or death date is in vogue today as per the pañchānga. In the Tamil country the Indian calendar system was employed for the first time to fix the accession dates of the Chōla kings. Accession date of the Chōla king as a specimen has been given for one king. King Rajadhiraja I has been chosen to find out the accession date.

Mathematics has to be applied judiciously and cautiously without disturbing the truth and correctness of the events furnished in the records. Astronomical data and the process of equivalent dates are put into severe strain. For example the weekdays should not be changed at any circumstances to arrive the equivalent dates whereas the correction can be given to the tithi or nakshatra.

The astronomical data in some cases enable us to differentiate the kings of the same name because they suit only one king. In some cases where the data do not agree, attempt has been made to correct the regnal year. But the regnal year should not be corrected; the data sometimes may require correction with respect to *tithi* or star so as to satisfy the rules followed by the Solar system. However the astronomical data are the best that are to be applied at the right place and at the right time so that there is no distortion in the current events.

Grants have been made by the rulers, chieftains, merchants and individual on the occasions of ayanas, etc. It is to be noted that auspicious and religious functions have been performed on these days. Not only do these grants mark specific occasions and their observances but also the reasons for which the endowments have been made are recorded in the epigraphs. Kings have taken the privilege of making grants on specific occasions as a sort of pariharas in several forms in order to ward off the evil effects.

The grants have been made by the kings for their own welfare and for the welfare of the kith and kin and as well for their predecessors. A special attention has been paid by observing these occasions not only by the individuals but also by the temples and the temple officials. The astronomical occurrences have been scrupulously followed for they have been adopted with the specific purposes. They not only give us the pictures about the significance of the astronomical details available but also enable us to understand the chronological sequence of the kings and the events. These details are also helpful to reckon the date of the kings on the basis of the astronomical occurrences i.e., the ayanas, the eclipses, sankramana and sankranti.

1.2 NEED FOR STUDY:

The occurrences of the ayanas and eclipses are more in number in Andhra Pradesh, Karnataka and Tamilnadu than in other states. Interestingly the movement of Jupiter is exclusively seen in Kerala inscriptions. Therefore the study has been delimited to these areas only. The celebrities of the festivals take place in Tamilnadu with pomp and glory and the importance has been given to them in Tamilnadu than the other states. Many of the inscriptions furnish elaborate details of the dates on which they have been recorded. For example, The details of the date like the Era, phases of the moon, Krishna paksha (Waning Moon), and Sukla paksha(Waxing Moon), star, tithi, Hindu calendar year, Saka year, Solar and Lunar months, Jupiter movement, position of Saturn, Mars, Transit of the Sun, Uttarayana and Dakshinayana periods, occurrence of eclipses, i.e., Solar and lunar eclipses, astronomical details of festivals are all found recorded in the inscriptions from the middle of the 5th century A.D.

One of the earliest references to the details of dates is found mentioned a charter from Babbepalli in Andhra state and in the Pulankurichchi from Tamilnadu. These astronomical details help us to fix the chronology of the kings, accession dates of the rulers, the dates of the succession etc., Inscriptions also furnish the dates like Kollam era, Kali era, Saka-Vikrama era which details along with other astronomical data enable us to fix the dates of the kings in a clinching way.

1.3 REVIEW OF RELATED LITERATURE:

It is the Mathematics that enables us to understand a Epigraphy and History at large. Many scholars like Sri L.D.Swamikannuppillai, Kielhorn, N.Sethuraman and others have attempted to reconstruct the chronological history of the king on the basis of the Mathematics. The astronomical details of the kings have been meticulously examined by them by fixing the dates of the kings, and in finalizing the dates of the moments. Sri N.Sethuraman has brought out the significance of the astronomical data for the reconstruction of history. Also Ancient Indian Astronomy, Planetary positions and eclipses, Eclipses in Indian Astronomy by Dr S. Balachandra Rao serves as the source material for the study of astronomical significance. They emphasize the fact that Epigraphy and Mathematics go hand in hand with each other and forms the main source materials.

The Ancient culture and socio-economic conditions of our ancient people can very well be understood with the help of the astronomical details given in the epigraphs. While taking up the study of epigraphs, the authenticated astronomical details will come to our rescue. These details have far reaching effect while recurring the socio-political conditions of the respective periods. For the sake of the astronomical occurrences figuring in the inscriptions the primary sources have been consulted to draw the different chapters.

1.4 OBJECTIVES OF THE STUDY:

The main object of this study is

a) to document the different astronomical details figuring in inscriptions so as to examine the nature of the gifts made for different purposes on the astronomical occasion of Uttarayana period;
b) to determine the nature of the gifts made for various purposes on the occasion of Dakshinayana period;
c) to understand the importance of Solar and Lunar eclipses on which day the grant was made for several purposes;
d) to find out the nature of the gifts made for different purposes on the occasion of festivals observed in temples and on specific occasions;
e) to know the importance of Jupiter movement on which day grants have been made for various purposes.

1.5 METHODOLOGY:

The present study envisages the study of inscriptions pertaining to the astronomical occurrences and their significance while making grants in the states of Andhra, Karnataka, Kerala, and Tamilnadu. The details have been culled out from the epigraphy of four states like Andhra, Karnataka, Kerala, and Tamilnadu.

1.6 DATA COLLECTIONS:

The periodisation of the data has been classified into five phases namely

6^{th} century to 800 A.D;

800 A.D. to 1000 A.D. --Early period, covering the inscriptions from late Pallava to the period of Rajaraja I;

1000 A.D. to 1200 A.D. -- Medieval period, covering the period from Rajaraja I to Kulottunga III;

1200 A.D. to 1400 A.D. -- late medieval period, covering the period from the end of the Chola rule to the beginning of the Vijayanagara period;

1400 A.D.to 1600 A.D. -- late period, covering the entire Vijayanagara period till its decadence.

1.7 PERIOD OF THE STUDY:

Published and unpublished inscriptions are available from 6th century A.D. to 1600 A.D., have been taken up for examination. But for the purpose of graph the period has been taken from 800 A.D. Materials are also available from 800 A.D. Since only a few inscriptions are available from 6th century A.D. to 800 A.D., the material has been collected and studied from 800 A.D.

Inscriptions have been tabulated and chronologically arranged in order to reconstruct the history and to bring out the data in a coherent way. The astronomical details have been calculated in the coastal area of Andhra, Karnataka, Tamilnadu and Kerala on the basis of solar reckoning. Mathematics lends a supporting hand to solve the problems. In the case of interior Andhra and interior Karnataka lunar reckoning has been followed. In the case of Kerala the reckoning is based on the Jupiter movement.

The rulers of the south have paid greater significance from the time immemorial for the auspicious occasions. It was the practice to make grants on the royal crowning ceremony, celebration of natal stars, the annaprasana ceremony and for performing the Vedic ritual. In order to perpetuate the grants and to offer pariharas to mark the birth day ceremony and to derive merits to the forefathers astronomically calculated occasions have been chosen. Broadly speaking the occasions like the days of eclipses, the days of Ayanas, days of Sankramanas and the festival days have been selected for a detailed study.

1.8 AREA OF THE STUDY:

The area of the study has been confined to southern states in order to analyze the records available in Kannada, Telugu, and Tamil and Malayalam languages. For the sake of convenience a few bordering states like Pondicherry and Goa have been dropped.

1.9 STATISTICAL TOOLS EMPLOYED:

Data pertaining to astronomical occurrences have been collected classified and tabulated. Further relevant graphs have been prepared for the objectives of my study. In order to examine the nature of the grants made for different purposes for different occasion the researcher has used graphs. Inferences have been given at the end of the chapters.

1.10 SCOPE OF THE STUDY:

The study is to know as to how far the astronomical details are used to fix the date of the inscription so as to enable the historians, to find out the chronology of the kings, the regnal year of the kings, the importance that have been given to the rulers for the coronation of the king.

1.11 CHAPTERISATION:

The study has been divided into seven chapters.

The first chapter deals with the introduction covering need for study, review of related literature, objectives of the study, Methodology, Data collections, period of the study, area of the study, statistical tools employed, scope of the study, and chapterisation.

In the second chapter, importance has been given to Uttarayana period from Makara to Mithuna has been considered auspicious for making grants, to the temples, by the rulers, chieftains and at the time of coronation of kings and queens.

The solar year is the same all over India. It commences with the instant of the sun's entrance (samkranti) into the Hindu sign of Mesha-Aries, which is, at the same time, the beginning of the solar month Mesha. The beginning of the other solar months similarly determined by the entrance of the sun into the different zodiacal signs.

The items of the solar calendar most frequently recorded in documents are the Samkrantis, which, as stated above, are identical with the true commencements of the several solar months; and of which the Makara-Samkranti is also called Uttarayana samkranti, because with it the sun enters upon his northern course.

The *Vedas* declare that the period when the sun takes its northward path (*Uttarayana*) is sacred. The great warrior *Bhishma* lying on a bed of arrows, waited for 56 days for the advent of *Uttarayana*, for the release who thereafter surrendered his soul to *Krishna* to end his life. The ancient Legends (*Puranas)* have stated that whoever passes away in *Uttarayana* will attain liberation because the Brahma loka gate gets opened. The Tamil *pañchāngam*, unlike the purely lunar *pañchāngam* followed by the Kannadigas and Andhras, marks the beginning of *Uttarāyanam* on the day of Makara *Sankranti*. *Uttarayana* is related to the beginning of the apparent northward movement of the sun. The sun moves every month from one house of the zodiac to the next. The sun enters the house of Capricorn (Makara) so it is known as *Makara – Sankranti*. This auspicious day heralds the conferment of many worldly and spiritual blessings on man. The *sankranti* day is a witness to the prospective successes of man in many fields. It is a good augury to witness new things for the success of one's life.

For example Tandikonda grant of Amma II gives in the beginning the genealogy and chronology of the Eastern Chalukya kings upto Amma II. It corresponds with the details given in Elavallu, Padamkaluru and the Malipundi grants of this king. It furnishes a totally different chronogram date viz., nabha tasu-vasu (880) unlike the date given in the other charters of the king as giri-rasa-vasu (867). Probably the present grant was issued on the occasion of Uttarayana-sankranti in the Saka year 880=958A.D..The expression *asmad-desa-santaty-ayur-arogy-aisvaryy-abhivriddhy-artthin* means for the increase of our country, progeny, life, health and prosperity.[2]

The king Ammaraja is said to have made a grant on the occasion of Uttarayana, for the increase of progeny, life, health and prosperity of the people, for repairs to the temple (*Khandasphutita-navakarma*) for offering bali, naivedya and for a chatra (feeding).

In a record of Eastern Chalukya king from Eluru dated Saka 925= 1003 A.D., the grant of land to god Somanathadeva was made by parichchheda Chikka-Bhimaraja for the purpose of Havirbali archana on the occasion of the uttarayana sankranti.[3]

It is interesting to note from this record that the Jaina preceptors and the disciples also paid importance to the Uttarayana Sankranti. Not only the Hindu rulers but also the rulers who had leaning towards Jainism also considered Uttarayana Sankranti as sacred and rectified them by making liberal gifts. This indicates that the Hoysala rulers also patronized the Jaina temples on account of the patriotic feeling among them.

An attempt has been made to the occurrence of the dates of the kings with the available astronomical details. In first case if the Saka year and the astronomical details are given the Christian era year with date and day can be found out. In second case if the regnal year of the king and the astronomical details are furnished then the Christian era year with date and day can be found out. In third case if only the astronomical details are given we can find out the dates with options. The Indian ephemeris comes to our help to calculate the Christian era equivalent year in A.D.,with date and day out of the Saka year, astronomical details and other internal evidences. To justify the need of the Indian ephemeris the dates of the rulers have been worked out.

It is interesting to note that the Kumbalur plates of Rashtrakuta Govinda IV dated 929 A.D., refers to the festivities prior to coronation that took place on the day of Uttarayana in conjunction with Uttara palguni nakshatra. It is for the first time that we hear of the coronation ceremony that is being performed on the occasion of Uttarayana from among the inscription of the Rashtrakuta rulers. [4]

In the third chapter, importance has been given to Dakshinayana period from Karkataka to Dhanus while making grants, to the temples, by the rulers, chieftains etc., and at the time of coronation of kings and queens.

The Karkataka-Samkranti is called the Dakshinayana-Samkranti, because with it the sun enters upon his southern course. The Karkataka sankranti falls three solar months after Mesha sankranti called Dakshinayana (southward going) sankranti. It is the point of the summer solstice and marks the moment, when the sun turns southward. The Tula sankranti, three solar months later, marks the autumnal equinox, or the moment of the sun's passing the first point of Libra.

For example the Dalavay Agraharam plates of Varatungarama Pandya, dated Saka Samvat 1510 (1588 A.D.), on the 30th of the month Ashadha, Grishma-ritu, Dakshinayana, of the year Sarvadhari which was the Second tithi of the bright fortnight, in the Satabhishak nakshatra, Sobhana yoga, and Subha karana, the king, who was called Abhirama Sundaresvara, who bore the Biruda Varatungarama and who was crowned by the name of Abhisheka Vira Pandya born in the Pushya nakshatra and belonging to the Atreya-gotra, granted the village of Silarippatti, belonging to Adi-nattu Tinaimar Pudukkottai and consisting of eleven shares, in order to please Vishnu, to Govinda Bhatta, son of Udayambhatta, of the Bharadvaja gotra and Asvalayana Sutra, a Student of Rig-Veda and a native of Vanivala.[5]

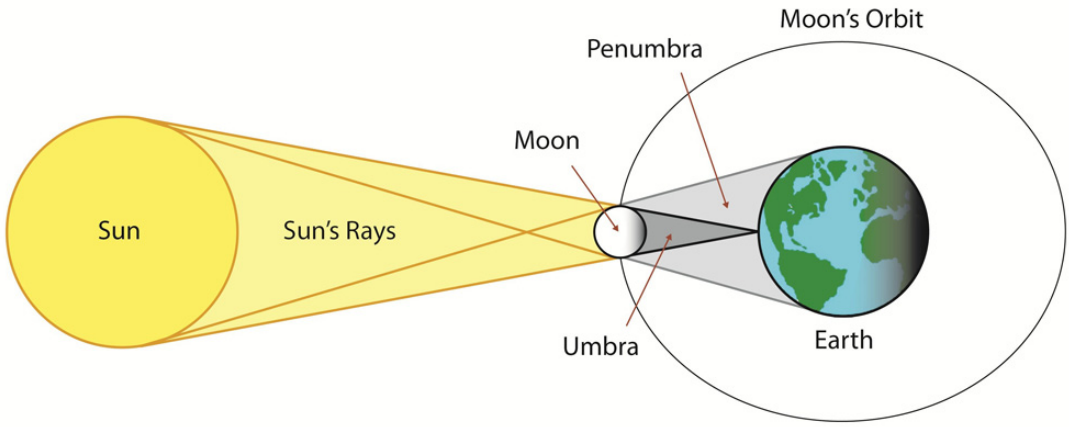
The fourth chapter pertains to the significance of eclipses at the time of making donations to the temples, by the rulers, chieftains and others and the coronation of kings and queens.

An eclipse is defined as an astronomical event that occur when one celestial object moves into the shadow of another, partially or fully obscuring it from view. An eclipse on earth occurs when the sun, the earth and the moon are in a line together. The two primary types of eclipses seen in the earth are solar eclipse and lunar eclipse.

1.11.1 SOLAR ECLIPSE:

It describes the occurrence of when the moon travels between the sun and the earth blocking the sun's light from the earth in the middle of the day and generally giving the appearance of a ring of light in the darkening sky.

Fig-1.3 Total solar eclipse



For example Coronation ceremony in Andhra that takes place on the day of Solar Eclipse:

The royal personages in the Eastern Chalukyan family have been coronate on auspicious occasions by paying importance to planetary combinations. According to Hyderabad grant of Pulikesi II, the Badami Chalukya king, his Rajyabhisheka ceremony was conducted on the day of total Solar eclipse dated Saka 534(612 A.D.) [6]

The Tirumalpuram inscription of king Parantaka-I made grant of gold for sacred offerings on the day of Solar eclipse in 937-38 A.D. The Anaimalai inscription dated in the 33rd year i.e., 940 A.D. of Parantaka-I refer to the grant of two velis of land for food offerings to the god and for feeding of the Vedic Scholars on the occasion of Solar eclipse. It was stipulated that the grants was to commence from Friday, the month of Karkataka when there was an eclipse of the sun and the nakshatra was Aslesha. This helps us to confirm the initial date of Parantaka- I was 907 A.D. Calculating backwards 939 ,July 19,when the weekday was Friday on which the nakshatra Aslesha was ended after the mean Sunrise. There was also on this day the eclipse occurred after Sunrise.[7]

Tarikere taluk inscription refers to the rule of Hoysala Narasimha. It is dated Saka 1016, Sarvajitu, Chaitra su.1, Monday, Solar eclipse. These details are irregular. It also refers to the rule of Bammarasa, the Ganga king from Asandi. The details of

date may be equated with Friday, 21st April 1167 A.D., falling in the reign period of Hoysala Narasimha I. However, the Saka year was 1089 and the tithi was amavasya. It states that Keta-gauda, son of Chikka keta-gauda and kala-gandi, got consecrated Siva-linga called Bhimesvara and granted certain lands to god for the worship, offerings; perpetual lamp and for the repairs and renovations of the temple. The grant was made over to Malluka-jiya. Further it states that Soma-jiya, son of Malluka-jiya in the presence of hal-prabhu (named) and all the subjects made a grant to his sister's son Kalla-jiya together with his daughter Masanavve.[8]

A record from Kolumam states that Kongu Chola king Vira Chola from Sangramanallur dated 1183 A.D., caused the construction of a temple and consecration of the image of Vira Chola Isvaram-Udaiyar named after him at Kolumam to mark the occasion of Solar eclipse which occurred on the day of the ruler's asterism of nativity. It further records the grant of the right of worship permanently in the temple and other grants made by the king to a certain Ejnamutti Mulasthanamudaiyan alias Kannabhattan.[9]

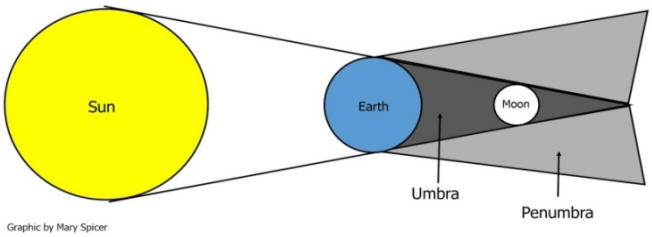
A record of Viraballala dated in Saka 1111(=1188 A.D.) records the grant of lands and income from oil mill for maintaining the perpetual lamp in the temple of Mulasthana Gangesvara of Hemmanahalli by Mahadeva under the orders of Mahapasayta, Mokhari Lakkayya, father of Bommala-mahadevi the Hoysala queen. It further refers to the consecration of the images of Nandi and Vinayaka. The above gift has made on the occasion of Solar eclipse on the day of Amavasya. [10]

According to a record from Srirangam dated Saka 1457, Manmatha, Karkataka, ba.15, Wednesday, Punarpusam, corresponding to 1535 A.D., June 30.The gift of the village Kadambankurichchi in Kilangu-nadu was made for daily offerings of curd rice (dadhyodana) to god of Ranganatha of Srirangam. But there was Solar eclipse on that day which is not mentioned in this record. [11]

1.11.2 LUNAR ECLIPSE:

During a lunar eclipse, the moon moves into the shadow of the earth during night time hours, gradually blocking the moon from the earth. On earth, there can be anywhere from 4-7 eclipses of varying degrees within any given year. There are actually several types of lunar eclipses. They are total, partial and penumbral.

Fig- 1.4 Geometric of a lunar eclipse



A lunar eclipse occurs when the Moon passes directly behind the Earth into its umbra (shadow). This can occur only when the sun, Earth and moon are aligned exactly, with the Earth in the middle. Hence, a lunar eclipse can occur only the night of a full moon. The type and length of an eclipse depend upon the Moon's location relative to its orbital nodes.

Unlike a solar eclipse, which can be viewed only from a certain relatively small area of the world, a lunar eclipse may be viewed from anywhere on the night side of the Earth. A lunar eclipse lasts for a few hours, whereas a total solar eclipse lasts for only a few minutes at any given place, due to the smaller size of the Moon's shadow. Also unlike solar eclipses, lunar eclipses are safe to view without any eye protection or special precautions, as they are dimmer than the full moon.

On the night of May 15 or 16, we will be able to see a total lunar eclipse. We have a full moon every month that we should also therefore have a lunar eclipse every month but not so. Because the orbit of the moon is tilted by about 5.2” with respect to the earth's orbit, so that usually the moon passes slightly above or below the line between the sun and the earth. Thus at most full moons the shadows miss their mark

and no eclipse occurs. Only about every six months during an eclipse season are the conditions right for the lunar eclipse.

In lunar eclipse the Sun, moon, and the earth are at the point of maximum stress and represent the culmination of events a catalyst from which only dramatic change can come based on what has already been experienced. All fall within the range of 2 decades .This helps us to understand not only to count the regnal years of rulers but also the sanctity attached by the king while making grants.

The Pulimburu grant also furnishes the season, the day, etc., the eclipse must have occurred on the 15th day of the bright fortnight of Purnima-tithi, evidently Phalguna, the last month of the said year. The 18th year of Jayasimha either current or expired, when counted from any one of the three following years has a lunar-eclipse on Phalguna, su 15. The lunar eclipses in Phalguna-Purnima in Saka 579 (657 A.D.); Saka 580 (658 A.D.) and Saka598 (676 A.D.) falls within the period from 650 to 680 A.D. The last date is too late for Jayasimha's reign period. Hence, either 657 A.D. or 658 A.D. seem to correspond with the 18th year of Jayasimhavallabha I. This enables us to count his reign period from Saka 563 (641 A.D.).The date of the grant under discussion is 659 A.D. February 12, when there was a lunar-eclipse. This copper plate grant was given on the day of Phalguna Purnima coinciding with lunar eclipse. In ancient times also they were following the saros cycle.[12]

In order to fix the exact date of the grant it may be necessary to review the cycle of periodicity of repetition of the eclipses particularly the well known cycles namely Saros and metonic cycles. According to the Saros cycles the interval between two successive passengers for the Sun and through the moon's node (Rahu) is about 346.62 days and 19 such intervals amounts to 6585.78 days. The mean length of synodic month is about 29.5306 days and therefore 223 lunation are equivalent to 6585.32 days. This period is called Saros and it is equivalent to 18 years 11 days and 8 hours. Eclipses of the same type are generally repeated once in a saros period (i.e) 18 years 11 days and 8 hours. Similar to Saros there is another period called metonic cycles are about 19 years .We noticed that 239 lunations are equivalent to 19 years. According to metonic cycles phases of the moon repeated.

Viewing against this background it may be suggested that the first date while equivating the lunar eclipses in the month of Phalguna in Saka 579, the astronomers might have predicted the occurrence. So also the case of second date the Saka 580 with respect to the third date Saka 598 the astronomers who lived in the Eastern Chalukya period predicted the day on which the lunar eclipse occurred. Besides three dates the Saka date 581 has been suggested by the editor of the inscription and tallies it with February 12, 659 A.D., when there was a lunar eclipse. So it may be inferred from this discussion that the astronomers had the knowledge of predicting the eclipses using a cycle similar to Saros cycle. Hence the Saros cycle will be very useful for predicting the eclipses.

The incidence of the conjunction of lunar eclipse and Vishu sankranti can be witnessed from the record of the 10th regnal year (972 A.D.,) of Western Ganga king Marasimha II from while he was ruling from Arani village Nagamangala Taluk, Mandya district. [13]

This Kannada inscription of the Tamil ruler in Chikkakati specifically states that the gift was meant to be granted on the day of lunar eclipse dated in the 33rd year of Rajadhiraja. A record states that one Achayya of Torekaratti having caused the temple to be constructed for the merit of his parents, to the forefathers of 21st generations and 6 cows for the maintenance of the lamp for the god Madeva and Ekkagondadeva by Makayya of Elandevadi on the occasion of lunar eclipse. The gift was made on this eclipse day for those learned and well versed in vedas.[14]

On lunar-eclipse in the Saka year 1076(1154 A.D) the minister of Kulottunga Chola made a grant of 50 goats for a perpetual lamp in the temple of Sureshvara at Karema pundi in Guntur district.[15]

The Eastern Chalukya rulers adopted the Amanta Chaitra Sukla which represents the Telugu new year's day as the first day of each regnal year and the whole of the luni-solar year in which the accession or at any rate the coronation of any particular king took place was counted as the first year of his reign. His second year was calculated as to begin from the Chaitra sukla 1 coming after his coronation or

accession. It refers to Saka 1141, Bahudhanya, Pausha, lunar eclipse, corresponding to 1219 A.D., January 2, Wednesday. However the Saka year was current. [16]

It gives an account of the genealogy of the king and then registers a royal tax-free grant of the Mahagrahara vallalapura also called Praguchchi consisting of 86 vrittis, out of which two each were assigned for the learning of Rigveda, etc.,for the teaching of sciences (Sastra-vyakhyana) and for the village deity Kesava,the remaining 80 vrittis were assigned to the Vedic Scholars of different gotras well-versed in several branches of learning.

A copper plate record dated in Saka 1502 (=1580 A.D.,) states that the chief of Tanjore Chavappa Bhupala granted 4 villages in the Siranadu of Mayuradesa for burning a lamp before the god Ramachandra and for feeding in the matha on the occasion of lunar eclipse. The elder brother of Chavappa, who is the donor, is described as a great patron of learning in whose court Vijayindra, the donee and Tatacharya the leader of the Srivaishnavas and Appayya Dikshita, the champion of Sivadvaita are stated to have assembled to establish their respective schools of faith. [17]

In the fifth chapter which pertains to Kerala inscriptions, the importance of the Jupiter movement has been brought out with the examples.

The reckoning of dates of the inscriptions is based on the revolution period of Jupiter through the zodiac signs of the Zodiac ie., *viyalavattam.* While the dating in Tamilnadu and Andhra inscriptions are a mixture of *unisolar* and *chandramana*. According to the *viyalavattam*, the year was named after the sign of the zodiacal constellations in which the planet Jupiter stays in a sign for a year (approximately). The climatic conditions of Kerala have a bearing on the engraving of inscriptions on stone. They would have chosen the non rainy season for the engraving of records.

Sun stays in a sign for a month while the Moon stays in a sign for 2½ days. Before the engraver fulfils the job the Sun will be moving over to another sign apparently governed by the climatic conditions. Because Kerala experiences incessant rains for a period of seven months in a year, the movement of Jupiter is taken into consideration not only for the engraving of records but also for making grants. Also the other reason being, that Jupiter stays in a sign for a particular period constantly.

The records exhibit the fear of the people towards the evil effect of the planets. Reverting back to the situation that prevailed in Kerala it may be pointed out that the rulers gave more importance to the Jupiter movement. Further study has been taken up in order to explore the Jupiter cycle with respect to its position in several rasi's.

The Kerala year starts on the *simha samkrānti* (Sun crossing into sidereal Leo) in August-September. The month names are: Chingom (*simha*), Kanni(*kanyā*), Thulam (*tulā*), Vrischikam (*vrśchika*), Dhanu (*dhanu*), Makaram(*makara*), Kumbham (*kumbha*), Meenam (*mīna*), Medam (*mesa*), Idavam(*vrsabha*), Mithunam (*mithuna*), and Karkidakam (*karkata*). These are the, Malayalam variants of the traditional Sanskrit *rāśi* (zodiac) names. The number of days in each month may vary from 29 to 32 days. For instance, the month of Makaram has 29 days while that of Karkidakam has 32 days. Some of the following salient features are observed in Kerala.

For example: Grant made when Jupiter was in Mesha:

This inscription is engraved on the central shrine of the Vishnu temple at Tirukkakkarai belonging to 13th Century A.D. and seems to mention the Kali year 3705. In the year opposite to the three thousand seven hundred and five which was current and it was during this year when Jupiter stood in Mesha the god in the temple at Tirukkakarai was caused to be consecrated probably on which day the birth star of the donor falls. It may be inferred from the content of the inscription that the auspicious occasion coincides with the consecration ceremony. A record from Tirukandiyur lends support to this. It states that the custom of reckoning time from the date of construction of temples might be considered as an important event perhaps coeval with the founding of the city. [18]

The sixth chapter deals with the astronomical significance of religious functions and also calculating the astronomical data pertaining to the festivals with reference to the details found mentioned in the inscriptions. We come across number of references for conducting the festivals in the temples. These festivals are in accordance with the movement of the Sun and the phases of the moon etc. They have been calculated according to the month in which the festival occurs.

1.11.3 A FEW INSTANCES MAY BE CITED TO ILLUSTRATE THE ABOVE POINTS.

Chittira Festival:

A record from Pudukkottai dated in the 14th year (1135 A.D.) of Tribhuvanaccakravartikal Sri Vikkirama Cola of the Cola dynasty mentions the grant of lands to a dancing girl for performing *Santikkuttu* during the Chittirai festival before god. A record from Tiruvengavasal in Kulattur Taluk in Pudukkottai district on the wall west of the first prakara in the Vyaghrapurisvara temple and dated in the 14th year of Vikramachola (1135 A.D.), states that the nattar of Peruvayal –nadu assigned some temple land to a women called Elunattunangai for performing the dances Santikkuttu in front of the deity Tiruvengaivayal –Andar during the Chittirai festival.[19]

Avani festival:

A record of Maravarman Sundarapandya I dated in his 17th year (1233 A.D.) from Kudumiyanmalai mentions the gift of tax free *devadana* land along with a tank to the temple of Tirunalakkunramudaiya-nayanar by Sara Araiyan Terran Araisarkalanjappirandan alias Kadambarayan, for the expenses to be met with during the Simha (Avani)-festival, instituted by Sankaran Kandan.[20]

Fig-1.5 Boat Festival

Arudra festival:

During Arudra festival when the sun is in Dhanur rasi and moon will be in the Arudra star. Sometimes it will be full moon day. Arudra festival is meant only for Nataraja. Dance of Nataraja represents the cosmic dance. During Arudra festival in Margali and Vaikasi people give grants for Vedic recitation of Sama Veda, Santikkuttu, Chakkai-kuttu etc.

A record from Kamarasavalli, Udaiyarpalayam Taluk in Tiruchirappalli district on the north wall of the central shrine in the Karkotakesvara temple dated in the 29th year of Chola Parakesarivarman (Rajendra I) dated 1041 A.D. It states that the perunguri-perumakkal (mahasabha) of Kumaravalli-Chaturvedimangalam, heeding to the divine wishes, assigned land to the dancer Chakkai Marayan Vikrama Cholan for performing the dance Chakkai-Kuttu in the temple of Tirukarkotaka-Isvaram on Tiruvadirai festival days in the months of Margali and Vaigasi. Four members are from each of the four quarters (cheri) of the villages signed the document on behalf of the assembly. [21]

Another record from same district and dated in the 5th year of Rajadhiraja II records an endowment of land by purchase by Chadiran Irajan alias Kulottungachola-kidarattaraiyan of Peruvayal-nadu for performing santi kuttu six times during the day of Tiruvadirai festival in the month of Vaigasi in front of the deity Chadiravitanka-nayanar set up by him. The land was assigned to a women dancer Umaiyalvi alias Chadiravitanka-nangai. [22]

To quote an instance, the place Sringeri has been taken up here for study:

The Vidya Shankara temple at Sringeri in Chikamangalur district of Karnataka, was built by Sri Bharati Tirtha and Sri Vidya (Shankara) Tirtha on the banks of Tunga River. The Navaranga of this temple has twelve highly ornate pillars of the Dravidian type. Each pillar has a Zodiac sign sculpted on its back. Several scholars have mentioned that the morning Sun's rays fall on the pillar with the Zodiac sign corresponding to the Zodiac constellation in which the Sun appears at that time. This phenomenon is claimed to be similar to the working of a calendrical instrument.

This fascinating aspect of the Vidya Shankara temple has been investigated by the author on the basis of regular observations.

Fig-1.6 Vidya Shankara temple at Sringeri

The seventh chapter pertains to Astronomical details figuring in inscriptions, the Values of Eras, coding theory and Katapayadi code:

Salivahana Saka Era:

The identification of the Saka and the Kanishka eras primarily involves two questions viz. the date of Kanishka and the attribution of the eras to the Sakas and not to the Kushanas. The earliest epigraphic records that connect this era explicitly with the Saka belong to the period of the Chalukyas of Badami. The Chalukya inscriptions of the 6th and 7th centuries A.D. use expressions like Saka-varsha and Saka-nripa-rajy-abhiseka-samvatsara. There can be no doubt that the Saka kings referred to in these passages are those who held sway over western India for about 3 centuries before their extirpation by Chandragupta II by about the end of the 4th century. As a matter of fact, the Saka-satraps of western India are known to have used a continuous reckoning from the year 41 to the year 310, and there is no doubt that this has to be identified with the so called Saka kala, Sak-abda or Saka-samvat i.e.the year of Saka

rulers. The era used by the Sakas of western India could hardly be of their own institution. Firstly they were originally feudatories', as their Satrap title shows, and therefore were required to use the reckoning of their over lords. Secondly, no record of any date in the first 40 years of the era can be traced in the records of the Sakas of western India. It is therefore very probable that the early West Indian Sakas employed the reckoning of their overlords and their successors simply continued its use. To get the equivalent in the Christian era, one has to add 78-79 to the years of the Saka era. The era is popular in the land to the south of the Narmada, where the year begins on chaitra-sudi 1 and the months are Amanta. But, in the areas of the south where solar months are in use, the year begins on Mesha sankranti. The years of the Saka era are generally counted as expired the reckoning is commonly mentioned also in the north Indian almanacs, though the months are recorded as the purnimanta.

Kali Era:

The Kali-yuga era starts from the 18th February 3102 B.C. The expired Kali year is arrived at by adding 3179 to the expired Saka year. Similarly, we have to add to the years of the Kali era 3101 to arrive at the year of the Christian era. Kandiyur inscription of Kodavarman is dated in the 1511564th day after the beginning of the Kali era which is represented by the chronogram "Vishamampunyamekam" in which *va=4, sa=6,ma=5,pa=1,ya=1,ma=5 and ka=1* and they are to be read from right to left. This when reduced to Kollam andu and A.D. comes to

$$\frac{1511564\times4}{1461} = 4138\,\frac{638}{1461}$$ kali year;

the fraction may be left off and taking the year to be 4138 its equivalent Kollam Andu will be according to the formula. "கொல்லத்தில் "தரளாங்க"த்தை கூட்டுகில் கலிவத்ஸ்வரம்" (and தரளாங்கம் = 3926)

4138-3926 =212 M.E. +825 =1037 A.D.

M.E. = Kollam Andu. (i.e.) Here 212+3926 = 4138 Kali year.

4138- 3101= 1037 A.D.(i.e.) Kali year – 3101 = Gregorian year:

Christian year – 78 = Saka year (i.e.) 1037-78 = Saka year 959.

1.12 TRANSITS OF THE PLANETS:

Inscriptions refer to the transits of the planets in a particular rasi and the configuration of the planets which has resulted in the calamities earthquakes, floods, famine and other resultant occurrences. In particular case the evil effect of the planets has been predicted. for instance a record of Krishnadevaraya dated Saka 1445(1524 A.D) from Tiruvarangulam in Pudukkottai district mention some bad planetary configuration i.e., "*attatti in Kumbha rasi*". This is a good example of the evil effects at the time of astronomical occurrences.[23] In order to prevent the evil effect of this configuration the villagers and the tenants prayed to the divine intervention to protect the *nadu* from evil effects well in advance before the astronomical occurrence. Two more instances may be quoted here.

A Grantha inscription belonging to the period of Rajendra -Chola III and dated in the 13th year (1257 A.D.) pertains to the occurrence of famine in the Andhra area on account of Mina-sani, sometime before the date of the record i.e. before 1256 A.D. The area is near about Rajampet Taluk in Cuddapah district, Andhra Pradesh. During a famine that followed the Vedic Scholars left their places and when they returned found themselves supplanted in their possessions by the new comers who had in the meantime named their new settlement as Koduru, and refused to give the rent due to the Vedic Scholars landlords. The latter then made a representation to the chief Manumasiddhi. This Manumasiddhi said to have conquered a chief named Vijaya and tried to secure the friendship of Kakatiya-Ganapathi by fighting a battle for him on the banks of the Godavari river. He was a feudatory under the Chola king Rajendra-chola III whose regnal year is quoted. The extent of this famine is not known. However, there is an inscription from Tiruppampuram in Thanjavur district. Tamil Nadu dated in the 23rd year (1200-1201 A.D.) of the reign of Chola Kulottunga III refer the steps taken by the king during famine. [24]

The second inscription cited above indicates that the 27th year (1205 A.D.) of the reign of Kulottunga III was the very year in which famine conditions have prevailed in Tanjavur district. Since the 23rd year was over by the 7th July in A.D. 1207, it is possible that the effect of Saturn's transit through Pisces had commenced in the first few months in the year 1201 A.D., or in the later half of 1200 A.D. Thus it

appears that it was during this period i.e. from about May 1200 A.D., to sometime in June 1201 A.D., a serious famine occurred in the area around Perungandur in Rajampet Taluk in Cuddapah district in Andhra Pradesh. [25]and in Tiruppamburam in Nannilam Taluk in Tanjavur district in Tamil Nadu [26] .This famine had compelled the Vedic Scholars to leave their normal places of residence in the former area and also the cultivator (vellala) to sell himself and his two daughters to a temple in the latter area. Again during the time of famine many individuals sold themselves to temples to escape from privation and hardship.

It may be argued that Saturn's transit through Pisces could have occurred also in about 1230-1231 A.D., applying the average of 30 year cycle of Saturn's movement in the Zodiac. Since that is very close to the date 1256-57 A.D., of the Nandaluru record, the emigration of the Vedic Scholars due to famine is recorded as a past event. [27]

Both inscriptions and literature furnish astronomical details which are relevant for the reconstruction of the history. The chronology of the Cholas and Pandyas has been worked out with the help of the Mathematical reconstruction from the details given in the record. The investigations of the astronomical details given in the epigraphs are more valuable. Reconstruction of the dates of the early Chola kings as well as the Pandya kings is not so easy. Most of their inscriptions contain astronomical data. However, they create serious difficulties while identifying the rulers and fixing the chronology.

Coding is extensively used in today's world in different areas. Different code languages evolved as per some specific requirements. The army of a country has its own code language to pass secret messages. There is a barcode system on manufactured goods. Computer language has a different code. The coding is helpful only for a particular purpose. The military code is not use for programming in computers for the primary reason that both the subjects are disconnected and their requirements are different. The code language that was used in diverse areas like music, military, astronomy, poetry. There existed a code language in India that connected different subjects. The code language was 'Katapayaadi''. Two more different word numeral codes were known to exist in India apart from Katapayaadi-

the Aryabhatta numeral code and Bhuta Sankhya system. In each system of coding ,there would be certain rules that need to be followed to code a number into a word. And in Katapayaadi and Bhuta sankhya, these words would be 'meaningful words'. In the case of Aryabhatta's numeral code, the words need not be meaningful but huge numbers could be codified into small words.

For this study, inscriptional records lend support to understand the system of ancient dating used by the rulers and the people of the South. Though a number of eras have been used in the stone and copper inscriptions, yet the most commonly followed dating especially in South India are the regnal years, the Kali , Kollam era, The Saka dates, the use of chronograms and the Katapayaadi system. Both in Sanskrit literature and inscriptions, the Katapayaadi system and Chronograms have been frequently mentioned, for they give clinching evidences to date the inscriptions.

In order to avoid discrepancies while writing the Arabic numerals in the records, the chronograms have been mainly used. A number of instances can be cited to establish the authenticity of the records with the details of date such as Katapayadi and chronograms.

In addition to it, fixing the dates of the kings with reference to the astronomical data are given in the last chapter, besides the conclusion, the findings have been focussed in present study.

NOTES AND REFERENCES:

[1] *A.R.Ep., year 1947-48,p.30*

[2] *Ep.Ind., Vol XXIII,pp.161-70*

[3] *SII., Vol X,No:4*

[4] *Kumbalur plates of Rashtra kuta Govinda IV*

[5] *TAS., Vol I, No: XII,p.201*

[6] *Hyderabad grant of Pulikesi II*

[7] *SII.,Vol ,XXII,No:309*

[8] *Ep. Carn., Vol XII, No.3,p.336*

[9] *SII., Vol , XXVI, No: 145*

[10] *Ep.Carn.,Vol 5 p.833*

[11] *SII Vol XXIV,No 421*

[12] *Ep. Ind; Vol XIX., pp 254-58*

[13] *IWG No: 143.,*

[14] *Ep.Carn., Vol 3,No: 56, p.583*

[15] *SII., Vol X, No: 134*

[16] *Ep. Carn; Vol 8 : p. 73*

[17] *Ibid., Vol III: No: 116, p.218*

[18] *TAS Vol III: No :44*

[19] *Pd. No: 128,part-1,p.107*

[20] *Ibid., No; 304*

[21] *Ibid.,No.461*

[22] *SII., Vol XXXIV, No: 271*

[23] *IPS.,No:737, line 5*

[24] *A.R.Ep., year 1911,No:86 and part II ,para 29,p.71*

[25] *A.R.Ep., year 1907,No: 580*

[26] *Ibid., No.85 of 1911*

[27] *SII., Vol XXIII, No:580;*

CHAPTER - 2

IMPORTANCE GIVEN TO UTTARAYANA PERIOD WHILE MAKING GRANTS

2.1 AYANAS, SANKRAMANA, SANKRANTI:

A year consists of two *ayanas*. Each *ayana* is spread over six soura months.Each *ayana* signifies the sun's direction.Thus during *Dakshinayana* sun faces southern hemisphere of earth and during Uttarayana, Sun faces northern hemisphere.

2.1.1 SANKRANTI (SANKRAMANA)

The point of time when the sun leaves one sign of zodiac (house / rasi) and enters another is called *Sankranti* or *Sankramana*. In other words *Sankramana* is said to occur every time the Sun enters the next *rasi*. This event is a mile stone for *Soura-mana* (measure based on Sun). The *Mesha- sankranti* marks vernal equinox, the moment of the Sun passing through the first point of Aries (Mesha).The Sun moves every month from one sign of Zodiac to the next. *Sankranti* means 'sacred change' that occurs every month as the Sun moves from one house of the zodiac to another. But special sacredness attaches to the movement of the Sun to Capricorn. (*Makara-sankaranti*).

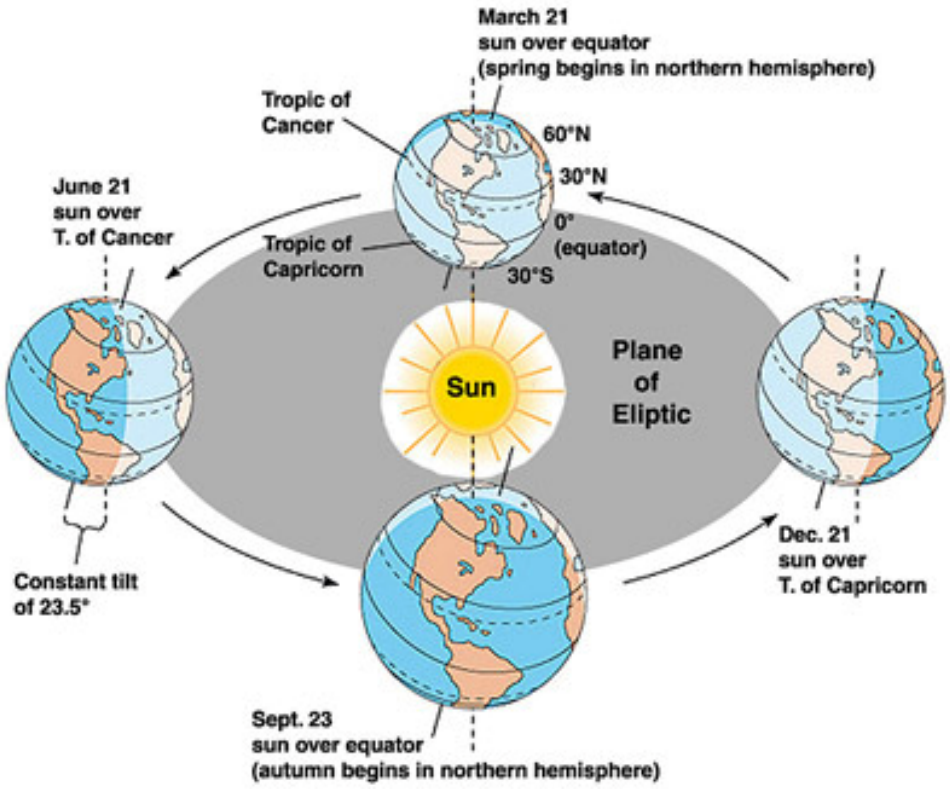
"The sun appears cool
The day gets shortened
And is made pleasant by chill wind
On the feels lit by Moonlight
The crows caw over the grain heaps
while the farmer sings in joy
over the golden harvest
The flowers express their joy
By putting forth their petals

while in every home, filled with grain
The people welcome the advent of *Sankranti"*

Uttarayana is the apparent movement of the Sun to north (Uttara), for one half of the year, *ayana*. As the Earth revolves around the Sun in orbit, the tilt of the Earth on its axis causes a gradual change where in the direct rays of the Sun fall. During the winter solstice, southern hemisphere tilts towards the Sun.The rays of the Sun appear to fall directly over the Tropic of Capricorn.

The southern hemisphere experiences the longest day and shortest night while the northern hemisphere experiences the opposite, i.e.,the shortest day and longest night. The northern hemisphere now tilts towards the Sun and the rays of the Sun appear directly over the Tropic of Cancer.From our perspective on Earth, the Sun has apparently travelled between the Tropic of Capricorn to the Tropic of Cancer. The return journey is called *Dakshināyana.*

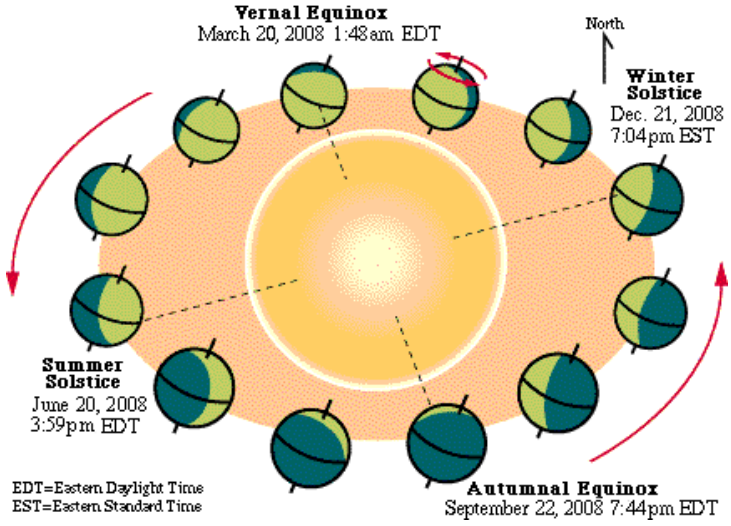
Fig : 2.1 Plane of Ecliptic



2.1.2 EQUINOXES:

Equinoxes happen when the ecliptic (Sun's apparent motion across the celestial sphere) and celestial equator intersect.When the Sun is moving down from above the celestial equator, crosses it, then moves below it, that point of intersection between the two planes is when the Autumnal equinox occurs.This usually happens around the 22nd of September when the Sun moves up from below the celestial equator, to above it, the point of intersection between the Sun and the celestial equator is when spring (Vernal)equinox occurs.It usually happens around the 21st of March.During the equinoxes , all parts of the Earth experiences 12 hours of day and night and this is how equinox gets it name as equinox means "equal night".At winter solstice (December) , the north pole is inclined directly away from the Sun. Three months later, the earth will reach the date point of the March equinox and that the Sun's declination will be 0˚, Three months later, the earth will reach the date point of the summer solstice.At this point it will be at declination -23.5˚.This cycle will carry on, creating the seasons that we experience on Earth. Equinox marks the midpoint between the solstices and corresponds to the time of the year when the Sun rises and sets on the celestial equator.As a result, the length of the day is equal to the length of the night .During Vernal equinox, on 21st March the Sun passes from the south to the equinox, on 20th September when the sun retreats to the southern hemisphere. Sun rise on both days occurs at an azimuth of 90˚ due east and Sunset at 270˚ due west.

Fig 2.2 Equinox and Solstice



2.1.3 SOLSTICE:

The earth is tilted 23.5 so is the ecliptic, with respect to the celestial equator, therefore the Sun maximum angular distance from the celestial equator is 23.5˚. At the summer solstice which occurs around 21st of June, the North Pole is pointing towards the Sun at an angle of 23.5˚. Therefore the apparent declination of the Sun is positive 23.5˚ with respect to the celestial equator. Summer solstice corresponds to the time of year when the Sun rises and sets at its maximum position in the north. At the winter solstice which occurs around 21st December, the North pole is pointing away from the Sun at an angle of 23.5˚.Therefore the apparent declination of the Sun is negative 23.5˚ with respect to the celestial equator.

The sages, scientists, sages etc., observed that longer daylight after the winter solstice in the northern hemisphere due to the apparent movement of the sun to north, uttara, towards the tropic of Cancer brought with it warmth, light, productivity, agricultural bounty and prosperity. This must have been an extremely significant aspect of their lives as they lived through the chill and darkness prevalent during the Ice Age in the Treta Yuga.Therefore this was certainly an occasion to celebrate which begins with the winter solstice, a date that is now approximately December 22 or January 15th.

Dr.Jacobi is of the opinion that the solar year commences with the instance of the sun's entrance (samkranti) into the Hindu sign of Mesha-Aries,which is, at the same time ,the beginning of the solar month Mesha.The beginning of the other solar months similarly determined by the entrance of the sun into the different Zodiacal signs. This means the end of the days of darkness in the northern hemisphere. The six months of darkness at the North Pole ends and the six months of light begin.

From the study of the inscriptions of Andhra pradesh we come to know the astronomical occurrences both in the copper plates as well as in the stone records. It is evident that the rulers of the various dynasties have paid greater attention to astronomical occurrences like *Ayanas, Eclipses, and Sankramanas* and other occasions.Grants have been made by the rulers both from their capital as well as from the place of the residence .Most of the grants made on auspicious occasions pertains

to the religious purposes.The grants made over to the temples are frequently referred to in the inscriptions.

A peep into the study of the inscriptions of the coastal and the interior *Andhra* region reveal the significance paid to the astronomical occurrences followed by the rulers.It may be observed that the grants have been made to the temples for various religious and ceremonial purposes on such occasions.The aim of such observances is to witness the radical changes in one's life.The coastal Andhra pradesh was ruled over by the Chalukyas of *Vengi* and Eastern Gangas of *Kalinga* while in areas like the royal Rayalaseema and Telangana provinces were governed by the Chalukyas of Kalyana Chalukyas of *Vemulavada*, the *Rashtrakutas*, the *Kakatiyas,* the Telugu *Chola* chieftains and the Vijayanagara rulers. During the period of Eastern Chalukyas of *Vengi*, several grants have been made by the rulers on the occasion of *Uttarayana.* It may be noted from the available inscriptions that the grants have been made to the temples on the occasion of Uttarayana *sankranti* by the individuals, chieftains and the officers and not by the rulers.That is to say the rulers have paid importance to *Uttarayana* while making grants.

2.1.4 Uttarayana:

The following are few instances observed in Uttarayana sankranti:

Ipuru plates of Mangi-yuvaraja was issued to the tenants of the Chanulpalliya-vishaya.The charters states that the king while he was camping at Astivihasana-Mandururu, granted the village Mlomparru, probably located in Chanulpallya-vishaya,after exempting it from all the taxes to the Vedic Scholars Agnisarmma of Hiranyakesi-sutra,who belonged to Vatsa-gotra and a resident of Vanaparru and his grandson (pautra)Susarmma and Mandasarmma,is described as the devotee of the donor king Mangi.This grant was made on the occasion of Uttarayana.[1]

A number of inscriptions belonging to 10th century from *Karnataka* region refer to the grant made on *Uttarayana sankranti day*. That importance has been given for the observance of *Uttarayana sankramana*.It was considered as an auspicious occasion by the Karnataka rulers for making grants to the temples, to the ascetics, etc.,

King Viravallaladeva of the Hoysala family made grant of lands at the auspicious time of Uttarayana, the constellation being Uttiram to the deity Tiruviramisvaram- udaiyar on the occasion of Tiruppallieluchchi conducted every month.[2]

A record from Alampur in Mahbubnagar district dated Saka 841 corresponding to 919 A.D., Pramadi, and Uttarayana records the gift of several plots of land to Lakulisvaradeva by Mahesvaraja-bhatara.[3]

In the Kadalur grant of Marasimha dated Saka 884 (962 A.D.,) the king made a grant while he was camping at Melpadi in the cyclic year Dundubhi, in the month of Pausya (Pushya) Tuesday, the 9th day of the dark fortnight, the nakshatra was Svathi the village Kadalur was donated to the Jaina teachers.[4]

In the Kuknur plates of the same king, the king granted the village Addavurag on the occasion of Uttarayana Sankranti in the cyclic year Vibhava to the Vedic Scholars Kalaparyya bhatta.[5] Two sets of Sakharambu grant of king *Vijayaditya* mention the grants made on the lunar eclipse at the time of Uttarayana.

Sakharambu grant of Vijayaditya belongs to the reign period of Vijayaditya-maharaja. It records the grant of the village Sakharambu in Velanadu – vishaya to a resident of Karambichedo named Devasarma of Karita-gotra, on the occasion of lunar-eclipse in uttarayana. The date of the grant is 763 A.D.The ajnapti of both the grants is Bhaurama.The seal carries the usual emblems along with the legend Sri Tribhuvanamkusa.[6]

A 10th century inscription refer to a grant of land on the occasion of Uttarayana sankranti to one Kuchibhatara, the preceptor of the Bhujangesvara temple of Balguliyur for his own maintenance and of 10 female attendants (devaditi) by Kachchaga Nirgandadeva perggade Jogapayya.The gift land belonging to the god had been alienated appears to have been released before it was granted.[7]

An epigraph of the reign of *Chola Narayana* who is probably the *Chola* king *Rajaraja I* dated in the Saka year 913, Khara, Pushya, corresponding to 991 A.D., December 24, one Poleyya of *Kelluru* endowed 2 *khandugas* of wet land at *Kirutlerur*

10 khandugas of land in *Nalligundu* in the presence of god, to *Somarasi Bhattaraka* of *Isvara* lineage.[8]

Two records of Uttama Chola from Koyil-Tevarayanpettai in Tanjavur district and Sembiyanmadevi of same district and third one also belong to Uttama Chola from Valappurnadu in Salem district all belong to the 10th century A.D.,on palaeological grounds are interesting from the context of the record.The record from Koviltevarayanpettai refers to the grant of land by the queen of Gandaraditta Madhurantaka in Tiruchchelur-Alvar at Rajakesari Chatuvedimangalam to provide for sacred bath to the god with 108 pots of water.[9]

The second record from Sembiyanmadevi registers the grant of land by Tribhuvana-Mahadeviyar to provide for the conduct of the sacred bath of the god for burning of perpetual lamp and feeding of the Vedic Scholars on the same occasion.[10]

The queen of Gandan Madhurantakan in a record from Valappurnadu is stated to have made a gift of 100 Kalanju for the conduct of worship in the temple of Tiruvarappalli-Alvar of Kolli-nadu.[11]

A record from Eluru in Andhra Pradesh records the grant of land to god Somanada to Parichchheda Chikka-Bhimaraja for the purpose of Havirbali Archana in the Saka year 925 (1003 A.D.,) December 24, Friday.[12]

Following is a record from Nitre which registers a grant of land to Madha-vayya, son of Narasingayya of Kolanellur by Pemma–gavunda for the god Adityadeva consecrated by his younger brother Bidivasayya.The details of the date are Saka 931, Saumya, Paushya, Sripanchami, Uttarayana Sankranti corresponds to 1009 A.D., December 24.[13]

A Kannada inscription refers to the rule of the Chola king, Rajaraja I and states that a certain panchara-maharaya was the maha-dandanayaka of Bengi and Ganga mandala. He is eulogised as having defeated in battles several kings of Tuluva, Konkana, and Belvala regions and is described as the Gandhavarana of Mummadichola (ie) Rajaraja I. This general is stated to have made a gift of rice for offerings twice a day and maintaining a perpetual lamp to the god of Balamuri

(Balambu-tirtha) of Bellegula.It is dated Saka 934, Paridhavi, the 28th regnal year of Rajaraja I corresponds to 1012-13 A.D.[14]

In a record from Gundlupete Taluk dated Saka 935 corresponding to 1013 A.D., Sunday and in the 37th year of the coronation of Nitimargga-permadi, while sri permadi-gamunda, the wheel of the illustrious master was holding the office of nalgavunda,the weaver (jeduvara) Ereyanga-gavunda of peraya, and the kuruvatti (shepherd) Beda-gavunda of peraya granted as gift (the village) Naranagal to Metarodeya, Marayya son of Sivamarodeya (who was the) son of Ayvamarodeya.[15]

From a Uraiyur temple inscription of Rajendradeva I dated 3+1st year of the king (1016 A.D.,) made provision of land in a village Atigunakarpakanallur for the worship in the temple of Mahadeva and the worship was conducted on festival days like uttarayana Sankranti,Karttigai etc. [16]

An epigraph of king Jagadekamalla [Jayasimha II] of Chalukya of Kalyana from Byadgi taluk in Dharwar district dated Saka 956= 1034 A.D, Bhava, Pushya su.11, Tuesday, December 24 records the construction of the temple of Mallikarjuna at Aluru by Amgiyabbe, and registers grant of lands to the same probably by the gavunda Kambayya. Also refers to another grant of land and money income to the same temple for repairs etc., on a late date viz. Vilambi, Phalguna ,ba.5, Wednesday by Boppa- gavuda of Aluru and others. Another record dated the 14th year of the Chalukya Vikrama era refers to the reign of Hoysaladeva and states that on the occasion of Uttarayana sankranti Udayaditya nayaka made a grant of lands to the Mulasthana temple of Asandi-nadu, to maintain the service of the god.[17]

In Valiveru record dated Saka 965, Subhanu, Uttarayana, corresponding to 1043 A.D., December 24, Saturday an Eastern Chalukya king is said to have made a gift of 150 sheep for the upkeep of 3 perpetual lamps in the temple of Tripurushadeva in the Velanandu district by Tikkapayya.[18]

The Hirenudihal record from Dharwar district belonging to Trailokyamalla (Somesvara I) gives the Saka year 967,Parthiba, Pushya, su.11, Sunday, corresponding

to 1045 A.D., December 22, refers to the rule of Chavundarayarasa over Banvasi 12000.But the Uttarayana sankranti occurred on December 24. [19]

A Kannada record from Tolalu states that the Vinayaditya-Hoyisaladeva made a grant of land for the food offerings to be made in the cyclic year Subhakritu, of the Saka year 983 corresponds to 1061 A.D.[20]

A damaged record belonging to the reign period of Hoysala Vinayaditya made a gift of land to Jaina ascetic Abhayachandra-pandita of Belave.The details of the date Saka 983, correspond to 1062 A.D., Subhakrit, and December 24.However the Saka year was 984.[21]

In another record of Trailokyanalla from Hedigonda in Dharwar district, there is a reference to the grant of land by Aytamma-gavunda to the temple of Kalideva of Tadasuru. The other details being Subhakrit, Pushya, Amavasya, Sunday, in the Saka year 984 correspond to 1062 A.D. [22]

King Vishnuvardhana-maharajadhiraja-Vijayadityadeva in his Hadagalli inscription is said to have made a grant of land to the temple of Nolambesvara at Moringere in Saka 987, Krodhin, Pushya, Punnami and Sunday.[23]A record from Daddala in Raichur district belonging to king Bhuvanekamalla [Somesvara II] the Chalukya king mentions the date Saka 991 corresponding to 1069 A.D., Saumya, Uttarayana-samkranti corresponding to 1069 A.D. It records a grant of twenty four *mattar* of fertile land of flower garden and one oil-mill and five house sites to the Girigotemalla-Jinalaya constructed by Makisetti at Ponnapalu by mahasamanta Maleyamarasa of Manuve.[24] The record from Ron in Dharwar district belonging to king Bhuvanaikamalladeva of Western Chalukya is dated in Saka 994 corresponds to 1072 A.D., Paridhavi , Paushya, Su 13, Sunday, and registers gift of oil,houses and flower garden for worship and lamps in the temple of Nakaresvara at Ponnapalu by the Nakaras . [25]Another record from the same place on the same date of Tribhuvana-malladeva refers to the gift of betal-leaves and oil-mills were made by certain Gavundas to the temple of Kalideva at Kuntige. [26]In a record from Hadagalli in Bellary district belonging to the reign of king Chalukya Chakravartin Bhuvanai-kamalladeva of Western Chalukya family dated in Saka 996, Ananda, and su.

Wednesday, corresponding to 1074 A.D., it is stated that Uttarayana samkranti was observed by endowing lands to the temple of Gauresvara at Gandaraditya-chaturvedimangala by Rudrabharanajiya. [27]

A Tamil record from Alambakkam in Tiruchirappalli district dated in the reign period of Vikramacholadeva (1075 A.D.,) refers to the gift of land for food offerings to god Kayilasam-udaiya-mahadevar of Sri Madurantakach-Charuppedimangalam. The title Vikramachola deva was held by Kulottunga I in the early years of his reign.[28]

An inscription of king Rayamurari Sovideva of Kalachuri family of Kalyana from Bidar is dated Saka 1001 which along with other details of dates viz., year 2, Sarvadhari, correspond to 1079 A.D. It refers to the grant the land, gardens and income from taxes was made over to god Brahmesvara of Renjeru for worship, offerings and repairs and for feeding ascetics etc.[29] In the 15th year of Eastern Chalukya Vishnuvardhana 50 inupa yedlu was granted by Potiyabhatta for the upkeep of a perpetual lamp in the temple of Vasukiravi-Somesvara. The sankranti fell on 1087 A.D., December 25, Saturday.[30] The Alampur record of king Tribhuvanamalla of Chalukya of kalyana family is dated in Chalukya –vikrama 12 corresponding to 1088 A.D. It registers a gift of income from taxes made for maintaining a perpetual lamp in the temple of Chintaka Rechesvara of Madduru. [31] In the following year i.e., Vibhava and dated in the Chalukya-vikrama year 13, the details Pushya,ba.14,Sunday corresponding to 1089 A.D., January 13,Saturday.But the said Uttarayana sankranti occurred on December 24,1088 A.D. On this occasion the grant of land was made over to god Ganesvara of Elambunise.[32]

On Monday, December 24, 1089 A.D., the day of uttarayana sankramana occurred. This date agrees with Chalukya Vikrama year 14, Sukla, when Garaje Sankayye of Kalavara-nadu is said to have raised the temple of Mulastana.[33]

An inscription from Narayanapuram, belonging to Eastern Ganga ruler mention the celebration of Uttarayana sankranti.This record is dated Saka 1017, Uttarayana Sankranti, falling on Pushya, ba.11 corresponding to 1095 A.D., December 25, Tuesday. But Amavasya tithi falling on Saturday correspond to 29th December 1095 A.D.[34]

A record belonging to the rule of Tribhuvanamalla (Vikramaditya VI) mentions the observation of Uttarayana sankranti. It states that Chendava-gavunda of Kadavur got erected a temple and consecrated the image Chandesvara, on the day of uttarayana sankranti in the Chalukya vikrama year dated 21, Isvara, Pushya,ba.3,Thursday, Uttarayana –sankranti,corresponding to 1097A.D., December 24. [35]

A record from Chitapur in Gulbarga district belonging to king Tribhuvanamalla is dated Chalukya Vikrama year 24, Pramathin, Pushya, Amavasya, Thursday, Uttarayana-samkrama corresponding to 1100 A.D.,January 12, on this day the land, garden, oil – mill and shops was granted to god Mulasthana Kumareshvara by Srikantasvami -dandanayaka. [36]

A Velpuru record in Guntur district of an Imperial Chola king gives the details of the date Saka 1034, Chitrabhanu 14, Uttarayana sankranti.The Saka year cited seems to be a mistake for Saka 1024 in which case it correspond to 1102 A.D., December 25, Thursday, the month being Pushya falling on this date gift has made to the temple of Ramesvara by Vishnuvardhanamaharaja.[37]

A record from Ron in Dharwar district belonging to king Tribhuvanamalladeva of Western Chalukya dynasty is dated in Chalukya – vikrama year 27, corresponding to 1103 A.D., Chitrabhanu, Pushya, Punnami, Thursday, registers that Palageya – Chavundamayya and his wife Santikabbe made a grant of land for repairs, etc. of the Sabha mandapa.[38]

The Muddanur record of Chalukya of Kalyana king Tribhuvanamalladeva states that the date Chalukya vikrama 30, Parthiva, Pushya, ba.2, Thurday, falls on the day of Uttarayana-Samkramana in the Saka year 1027. It corresponds to 1105 A.D., December 24, the weekday was however Sunday and records that Iladevi, and wife of Mahamandalesvara Nagularasa bought a land from the mahajanas of agrahara Mudimir for fifty gadyanas and granted the same to god Ugramartanda.[39]

One of the imperial Chola rulers by name Kulottunga-Chola A.D., is stated to have made a gift of 50 inupa yedlu for the upkeep of a perpetual lamp in the temple of Tripurantaka-mahadeva in the Saka year 1033 and 42th year of the king, the other

details of date being Paushya, ba.8, Monday, corresponding to 1111 A.D., December 25. [40]

According to a record from Narayanapuram in Visakhapattinam district dated in the 39th year of the Eastern Ganga king Anantavarmadeva, a number of madas have been gifted for the upkeep of a perpetual lamp in the temple of Nilisvara of Nidumjerru. This date corresponds to 1114 A.D. [41]

Uttarayana sankramana has been observed as an auspicious occasion for various purposes by Hoysala rulers.Similarly the victory of Hoysala king Vishnu-vardhana is said to have been celebrated on the day of Uttarayana Sankramana in Saka 1039, Hemanambi, corresponding to 1117 A.D., December25, a Hoysala general Gangaraja endowed the village Tippuru.[42]

In the Saka year 1040 =1118 A.D., there is a reference to the rule of Poysaladeva and records the construction of Trikuta-Jinalaya in Kattarighatta by Demikabbe. She also made a gift of the village Arhanahalli, for worship in the Jaina temple. The details of the date given in the record are Saka 1040, Vilambi, Pushya, su.10, Thursday, Uttarayana sankranti corresponding to December 24, 1118 A.D.However the weekday was Tuesday.[43]

It is interesting to note from this record that the Jaina preceptors and the disciples also paid importance to the Uttarayana Sankranti.Not only the Hindu rulers but also the rulers who had leaning towards Jainism also considered Uttarayana Sankranti as sacred and rectified themselves by making liberal gifts.This indicates that the Hoysala rulers also patronized the Jaina temples on account of the patriotic feeling among them.

Inscription from Kommuru states that Nemmaluri suraya (Appana) made a gift of six uttamaganda-madas for the upkeep of perpetual lamp in the temple of Agastisvara. The sanis have agreed to measure the ghee on the day of uttarayana sankranti. The detail of the date Saka 1041, Vilambi, Pushya, su.5, Monday, corresponds to 1119 A.D. along with Uttarayana-sankranti. In Vilambi, Pushya, su.5 fell either on Wednesday or Thursday and it didnot combine with Uttarayana sankranti.[44]

One of the records of Hoysala Vishnuvarddhana from Karnataka is dated Saka 1042, Sarvari, Uttarayana sankramana, Monday corresponding to 1120 A.D., December 23, Thursday.On this date the Hoysala king made a grant of land in the presence of his queen Santaladevi.[45]

An Eastern Ganga record from Narayanapuram dated Saka 1044 corresponding to 1122 A.D., states that the gift of five madas was made by Vimjama for the upkeep of a perpetual lamp in the temple of Nillisvara for the prosperity of Chodagangadeva. The details of the date agree with 1122 A.D., December 25, Monday. The details of the date are correct. [46]

The queen Santaladevi wife of Vishnuvardhana in his Beluru record dated Saka 1044, Subhakrit, Pushya, ba.10, Monday, Uttarayana sankranti regularly corresponding to 1122 A.D., December 25 is said to have granted some land for the Vedic Scholars and to the temple of Dharmesvara.[47]

The record of Hoysala Vishnuvardhana in memory of his brother Udayaditya that village granted was converted into an agrahara and assigned as vrittis to the temple of Janardhana for worship,offerings etc., in the cyclic year Subhakrit, Pushya, Uttarayana sankranti corresponding to 25th December ,1123 A.D., the Saka year being 1045.[48]

Another interesting record from Narayanapuram dated Saka 104[6], Makara, su.10, Saturday, corresponding to 1123A.D. refers to the gift of madas made for a perpetual lamp to the temple on the day of Uttarayana. But it was not a day of Uttarayana sankranti which however occurred on Tuesday 25th December. If the figure in brackets be 8 then the details would correspond to 1126 A.D. December 25th Saturday where it was a day of Uttarayana Sankranti.[49]

An Eastern Ganga record from Narayanapuram dated Saka 1047, December 25, Friday corresponding to 1125 A.D., records the gift of a perpetual lamp in the temple of Nilisvara.[50]

A record dated Saka 1048, Visvavasu, corresponding to 1125 A.D., belong to the reign period of Poysala deva and states that one Bomana is said to have raised two

temples for the god Svayambhu of Ingilikanakuppe. The above grants have been made on the day of Uttarayana sankranti in the said year.[51]

A record belongs to the reign period of Hoysala Bittideva consecrated the god Singesvara and made a grant of lands for the decoration, offerings of the god. The details of the date viz., Saka 1051, Saumya, Pushya, su.13, Vyatipata corresponding to December 25, 1129 A.D. Wednesday.[52]

In the Saka year 1058 while Vishnuvardhana was ruling the kingdom, one Huviyara Narasimha-deva of Badavi donated 12 *gadyanas*, from out of interest of which accrued at the rate of one haga per one hon (gold) per month for a perpetual lamp to be maintained in the temple of Vishnudeva. The gift was made on the occasion of uttarayana sankranti in the presence of 1700 mahajanas of Banniyur. The details of date Saka 1058, Rakshasa correspond to 1135 A.D., December 24. It was also a practice to commemorate the occasion of the deceased person by making land grants during the reign period of Vishnuvardhana.[53]

A record of king Jagadekamalla [II] of Chalukya of Kalyana dated Saka 1059 corresponding to 1137A.D.,Kalayukti,regnal year,Pushya,su.15, Uttarayana-sankranti registers a gift of lands,flower–garden,house–sites, income from taxes and oil mills for worship and offerings to god Naranesvaradeva of Anamdur and for feeding Vedic Scholars and ascetics in the chatra.

A record of Hoysala Vishnuvardhana refer to Saka year 1060,Pingala, Pushya, su.10, Sunday and Uttarayana-sankranti, corresponding to1137 A.D., Thursday, December 23. However, the said Sankranti occurred on December 25.[54] An Eastern Ganga record from Narayanapuram dated Saka 1061, Makara, su.3, Monday, refers to the gift of five madas by a perpetual lamp in the temple of Nilesvara at Nidumjeruvu by Rajendra-Chodadeva, son of Pedda-Perma [di] raju.[55]

A record from Juttiga belonging to king Vishnuvardhana is dated Saka 1063,15th year,Pushya,ba.10,Wednesday,Uttarayana-sankranti corresponding to 1141 A.D., December 24,Wednesday. It states that one Proli pava,a dancing girl attached to the temple of Vasukiravi Somesvara of Duttika, made a gift of 50 inupa-yedlu for a perpetual lamp in the above temple.[56]

Another record from Indukuru in Kamalapuram Taluk of Cuddapah district has yielded a record in the Mugguru Akkalamma temple dated Saka 1063, Durmati, Paushya, su.11, Thursday, Uttarayana sankramana corresponding to 1141 A.D. It registers a gift of land made over to god Bhogesvara of Indupura, the modern Indukuru, by Mahamandalesvara Trailokyamalla-Hemmadideva-maharaja.[57]

The Ghantasala record of Kulottunga-Choda II is dated Saka 1066, corresponds to 1144 A.D. It states that one Kota-Kommisetti a Vaisya of the Nabela-gotra entrusted to the three hundred sanis of Ghantasala alias Choda-pandyapuram the sum of 10 Rajaraja-madas for maintaining two perpetual lamps in the temple of Jaladhisvara in the said town.[58]

An Eastern Ganga record from Narayanapuram dated Saka 1066, ba. Haritanaya-tithi(13), Sunday, Uttarayana sankranti correspond to 1144 A.D., December 24, Sunday records the grant of two perpetual lamps in the temple of Nilesvara (called also Nilisvara) one by Mantripota, brother of Tandali Bhimanatha of the Kayastha family and the other by Bachchana, also of the Kayastha family,both grants being made in the same year.[59]

An epigraph of Kalyana Chalukya king Jagadekamalla II in Gulbarga is dated Year 9, Akshaya, Pushya, ba.2, Thursday, Uttarayana Samkramana; Saka 1068 corresponding to 1146 A.D., December 22.It refers to the grant of mattar of land in Mudimir, for the worship and offerings to god Ramesvara and to maintain a feeding house.

One of the records of Hoysala Vishnuvarddhana registers the grant of lands to god Gangesvara of Elavangere and to god Ramanatha of Kuruva for the worship, perpetual lamp, offerings etc., by Ganga-gaunda. The details of the date Saka 1070, Vibhava, Uttarayana sankranti, lunar eclipse, Monday, correspond to Saturday, 25thy December, 1148 A.D.However there was no eclipse on that day.[60]

A record of king Jagadekamalla II from Raichur district is dated Saka 1071, Vibhava (Pushya), Monday, Uttarayana sankranti which correspond to 1149A.D. It states that mahamandalesvara Ghattidevarasa of the Haihaya family governing from

his headquarters at Morota renewed a former grant of land and himself endowed lands and income from certain taxes to god Mallikarjunadeva.

The Nadendla record dated Saka 1072, December 25, Monday corresponds to 1150 A.D., and states that gift of sheep was made by the wife of the mahamandalesvara Tammu Manderaju for a perpetual lamp in the temple of Mulasthana-Mahadeva of Nadendla.[61]

In the record from Ganapavaram dated Saka 1073 , December 25,Tuesday, corresponding to 1151 A.D., it is stated that the mahamandalesvara Kolani Katama-Nayaka made a gift of 50 inupa yedlu for a perpetual lamp in the temple of Svarnesvara in Padminipuram.[62]

Two Eastern Ganga records from Nadendla in Guntur district [63]and Narayanapuram in Vizhapatnam[64]dated Saka 1073 correspond to 1151 A.D., registers the gift of 55 sheep for the perpetual lamp to the deity Mulasthana Mahadeva of Nadendla by minister Komma for the welfare of the parents and the gift of 5 madas for a perpetual lamp to the temple of Nilesvara at Navapalli on December 25, Tuesday respectively.

An imperial Chola record from Ellamanda in Narasaraopeta district is dated Saka 1075, December 25, Friday correspond to 1153 A.D.,on the day of Uttarayana Sankranti a certain Buddana made a gift of the tank which he had constructed at Petluru to the temple of Trikotisvara of Kavuru.The gift was made for the purpose of Havirbali archana.[65]

According to Chilumuru record dated Saka 1075, it is stated that one Muppa Naganayaka made a gift of land as emoluments to the sani's and the mani's for a perpetual lamp in the temple of Ramisvara of Chunumuru and for feeding ten brah-mins in a choultry in the said village.[66]

Another record refers to the rule of Hoysala Narasimha I dated Saka 1075, Srimukha, Pushya, su.14, Monday, correspond to 1153 A.D. December 31. one more record refers to the rule of Hoysala Narasimha I and registers the grant of lands for the offerings and lights to god Amritesvara by the Sarvadhikari Mahapradhana.The donee

is stated to have raised the temple and a tank.The details of date given viz., Srimukha, Pushya, su.3, Sunday and Uttarayana sankranti correspond to 1153 A.D., December 20, Sunday on which day there was no Sankramana.[67]

A Chola record from Velpuru in Sattenepalli district dated Saka 1077, December 25, Sunday, corresponds to 1155 A.D. To the temple of Ramalingesvara a gift of 55 sheep was made by Kasaviya Veduraya, dependent of Velanati Kulottunga-Choda Gonka for a perpetual lamp in the temple of Ramisvara.[68]

An Imperial Chola record from Nadendla dated Saka 1078, December 25, Tuesday correspond to 1156 A.D., and states that a certain Narayana, son of Dandanayaka Vema-Nayakaya gave 55 sheep for a perpetual lamp in the temple of Mulasthana-mahadeva of Nadindla. The boyas have agreed to measure the ghee for the maintenance of perpetual lamp.[69]

An imperial Chola record from Edavalli in Guntur district dated Saka 1079, December 25, Wednesday correspond to 1157 A.D. states that Chandabhima potisetti, the merchant of Kulottunga-Choda Gonkaraju built the temple of Svayambhu-Brahmesvara of Edavalli and gave 55 sheep for a perpetual lamp in the said temple .The gift was received by the boyas who have agreed to measure the ghee for the maintenance of perpetual lamp.[70]

An inscription refers to the rule of Hoysala Narasimha I and states that a mahapradhana made grant to 102 Vedic Scholars of Amaravatipura and got conse-grated the image of god Amitesvara of Mulasthana The details of date viz.,Saka1079, Isvara, Magha, su.10, Monday, solar eclipse, Uttarayana sankranti, correspond to 1158 A.D. January 11.[71]

The Garnepadu record dated Saka 1083 correspond to 1161 A.D. and states that padalu Gandaya,servant of mahamandhalesvara parichchedi Tammu Bhimaraju made a gift of land to the temple of Koppisvara built by him on the bund of a tank to the east of Veruru.[72]

The Imperial Chola record dated Saka 1083 correspond to 1161 A.D., December25, Monday and states that Saranaya, brother of Kamidevi the wife of

Kulottunga –Choda Gonkaraju established the image of Gokesvara at Jevaramu and made a gift of land and an oil mill; to that temple and also of land to brahmins on the occasion of Uttarayana – Samkranti.[73]

An epigraph dated Saka 1084, Chitrabhanu, Pushya, su.3, Thursday, corresponds to 1162 A.D., Monday.It records the conversion of the villages Togaravadi and Manneya buvanahalli into an agrahara named Dharmapura, and the gift of the same to god Kesavadeva by the king, in the presence of mahapradhana, dandanayaka Bittiyanna, Hiriya-bhandari Hullayya, pasayta surigeya Nagayya and Lakumayya. The gift was made over to Sridhara, the muliga of the temple, whose genealogy also is given at the end.[74]

A record refers to the rule of Hoysala Narasimha I and registers the grant of land and an oil-mill to god Kalesvara for the worship, perpetual lamp and for guruparva by Bhuteya-nayaka.The details of the date Saka 1087, Parthiva, Uttarayana sankranti, Solar eclipse, Monday.The Saka and cyclic years correspond with 1165-66 A.D.[75]

While Viravallaladeva was ruling the kingdom, at the auspicious time of Uttarayan**a**, the constellation being Uttiram, the mahajanas made a sarvamanya grant of lands to god Tiruviramisvaram-udaiyar and (supplied) ulakku of rice for the food-offerings to this deity on the occasion of Tirupalli-elichchi conducted every month.

An imperial chola record from Kolluru dated Saka 1088, Paushya, Sunday, Uttarayana sankranti, corresponds to 1166 A.D., December 25, Sunday and refers to the rule of 21st year of Rajaraja.Also it refers to the grant of money made by one Bhimi-nayaka for a perpetual lamp in the temple of Narendrisvara.[76]

An Imperial Chola record from Prattipadu dated Saka 1089 correspond to 1167 A.D., December 26, Tuesday, and states that a Vaisya named Narayana gave a perpetual lamp and 55 sheep for its upkeep in the temple of Gandesvara.[77]

Another record dated Saka 1090 correspond to 1168 A.D., December 25, Wednesday. On the day of Uttarayana sankranti states that Pedda proli-Nayaka's son

Narayana gave 55 sheep for a perpetual lamp in the temple of Mallikarjuna at Mandavuramu.[78]

Yet another Imperial Chola record from Errabalem dated Saka 1089 correspond to 1169 A.D., December 26, Tuesday and states that certain Jitiya-boya made a gift of the village of Krapagarapuri free of all taxes to the mahajanas of Undaveli for the merit of Rajendra Kulottunga-Chodaraja.[79]

A Chola record from Sattenpalli which is dated in Saka 1091 correspond to 1169 A.D., December 25, Thursday. It states that a certain Sani Prolima gave 55 sheep for a perpetual lamp in the temple of Trikotisvara. [80]

A record from Nadendla dated Saka 1093 corresponding to 1171 A.D., December 26,Sunday registers the gift for burning a perpetual lamp to the deity Mulasthana mahesvara by Gundama wife of mahamandalesvara Buddaraju.[81]

A Modukuru record dated Saka 1093= (1171 A.D.) mentions that Surapa-Nayaka, a subordinate of Rajendra-Chodadeva built the temple of Chodisvara at Mrontukuru and granted lands and gardens to the temple.[82]

A record dated Saka 1093, Khara, Pushya, ba.10, Thursday, corresponding to 1171 A.D., December 23 refers to the rule of Hoysala Narasimha I, over the southern country (dakshina-desa-mandala) and registers a royal gift of the village Bavanahalli, to the temple of Brahmesvara got built by Bammavve-nayakiti.[83]

A Siripuram record dated Saka 1093, December 26, Sunday corresponding to 1171 A.D., states that Rajendra Choda, son of Velanati Kulottunga choda Gonka made gifts of land to the temple of Ramesvara of Siripuram.The gift to the sanis has been made by the king as a parihara to the temple and the temple women as a mark of victory over the enemies.[84]

An imperial chola record dated Saka 1094 , December 24, Sunday correspond to 1172 A.D., mentions that a certain Vemi-nayaka gave 55 sheep for a perpetual lamp in the temple of Mulasthana-Mallikarjuna at Panulapadu.The date is given in chronogram *dharani vardhdhi nanda*.[85]

A Velpuru record dated Saka 1096 correspond to 1174 A.D., December 25, Wednesday in the temple of Ramalingesvara states that a certain Prola-sani made a gift of 55 sheep for a perpetual lamp in the temple of Ramisvara of Velpuru.[86]

An inscription from Yenikepadu in Masulipatnam in Krishna district dated Saka 1096, December 25, Wednesday correspond to 1174 A.D. mentions that maha-mandalesvara Kulottunga Rajendra-Chodayaraja granted land for a perpetual lamp and also to the Sanis and Manis in the temple of Kesavadeva of Bejavada.The gift was made for the food offerings and Havirbali Archana.[87]

King Hoysala Viraballaladeva in the Hemmanahalli record dated Saka year 1097, Manmatha , in the bright fortnight of Karttika, su ,Sunday correspond to 1175 A.D. On the day of Uttarayana- sankramana one dandanayaka Bittimeyya Hadadasa made a grant.[88]

The record falls in the reign period of Ballala II and refers to the gift of an oil mill for a perpetual lamp in the temple of god Kalesvara by heggades Bittiyanna and Mallayanna. The details of date Saka 1098, Durmukhi, Paushya, ba.8, Vaddavara, Uttarayana sankranti correspond to 1176 A.D., December 25.[89]

An Eastern Ganga record from Bhogapuram dated in the 11th year of Anantavarmadeva and Saka 1100 correspond to 1178 A.D., records the construction of Rajaraja Jinalaya in Bhogapuram alias Vikramaganga virapenta and grant of land to the said temple by Kannama-nayaka and to goddess Ambikadevi.[90]

A record from the Bhujangesvara temple at Chamarajanagara is dated Saka year 1102 (1180 A.D.,) refer to Uttarayana- sankramana that occurred during the period of pratapa-Chakravarti Hoysala Vira Narasingadeva and to the grant made to god Bhujangesvara.[91]

A Kakatiya record from Tripurantakam in Kurnool district dated Saka 1107, Visvavasu, Paushya, su .1, Thursday, equivalent to December 24, corresponding to 1185 A.D states that Kakatiya king Rudradeva I made a gift of the village of Revuru to god Tripurantakesvara of Sriparvata.[92]

A record of Hoysala Viraballala written in Tamil and Grantha characters dated Saka1110 (1188 A.D.,) refer to the grant made over to a Vishnu temple.[93]

A Chola record from Ganapavaram dated Saka 1117 corresponding to 1195 A.D., December 26, Tuesday states that the Somayaraja the chief of Kolani-mandala gave 50 inupa-yedlu for a perpetual lamp to god Svarnesvara.[94]

A Hoysala Ballala is said to have consecrated the god Amritesvara at Amritasamudra and made the grant of an agrahara Huniseyakatta. It took place on Saka 1119, pangala, pushya ba.7, Monday, Uttarayana sankramana corresponding to Thursday, 1st January, 1198 A.D.[95]

The Velpuru inscription of a Kakatiya king name not known is dated Saka 1131(A.D.1209). It states that Kota Ketaraja"s concubine Gundadevi gave 55 inupa yedlu for a perpetual lamp in the temple of Ramesvara of Velpunuru.[96]

A record from Bezwada in Krishna district dated Saka 1141 =1219 A.D. in Kanagadurga mandapa registers the gift of 55 sheep for the perpetual lamp to god Mallesvara Mahadeva by a Boyumdu.

A gift of 13 goats for lamp was made to the same god on the day of uttarayana in the saka year 1143 equivalent to 1221 A.D. for the merits of his parents.[97]

A Kakatiya record from Munumaka dated Saka 1145 correspond to 1222 A.D., December 26, Tuesday refers to a gift of land to the temple of Amaresvara for the merit of Ganapatideva Maharaja.[98]

King Hoysala Vira Narasimha is said to have gifted lands for the maintenance of the temple. The details of the date Saka 1155, Nandana, Ashadha, ba.15, Monday, Vyatiata, Uttarayana Sankranti coresond to 1232 A.D., July 19.[99]

A Kakatiya record from Kondanayanavaram dated Saka 1157 (1235 A.D.,) states that Nagadeva of the family of Kaduvetti made a gift of cows to the temple of Brahmesvara. The date is given in chronogram as *saila bana kshiti sasi* (i.e) 1157.[100]

A Pudukkottai inscription from Tirugokarnam in Alangudi taluk refers to the twentieth year of the king Tribhuvanaccakravartikal Raja-Kesari Rajaraja III (1235-36

A.D.,) made an endowment to secure the welfare of his parents by providing lamps from the first day of the Uttarayana. [101]

According to Bejatpuram record of Kakatiya king (name not known) dated Saka 1160(1238 A.D.) states that Proto-Nayaka, got the images consecrated and built temples for them, granted lands was made to temple priests.[102]

In a record from Kalkunda dated Saka 1163,Plava, Wednesday, corresponding to 1241 .A.D., December 25 engraved in Tamil and Grantha characters, refers to Hoysala King Somesvaradeva and to the grant made as *tiruvidaiyattam* to the deity Perumal of Tarayur.[103]

A record from Kolakalur in Guntur District dated Saka 1164, December26, Friday, corresponding to 1242 A.D., states that Renturi Ekkiti servant of Kondapadumati Betaraja gave 50 cows for two lamps in the temple of Agastisvara of Kolankuluru.The gift was received by boyas to measure the ghee for the maintainance of perpetual lamp.[104]

There is a Kakatiya record from Ganapavaram which is dated Saka 1165, December 26, Saturday, correspond to 1243 A.D.It refers to a gift made by Enamadala Anuma-Nayaka, to the temple of Svarnesvara.[105]

In a record from Tripurantakam dated Saka 1171, Saumya, December 26, Sunday corresponds to 1249 A.D., it is stated that Jayasani ,the wife of Chodeboya, gave 50 goats for a perpetual lamp to be burnt in the temple of Tripurantaka-Mahadeva.[106]

A Kakatiya record from Kondanayanivaram is dated Saka 1173 =(1250 A.D.,) refers to the day of Makara sankranti on which day that the chief Narayana, younger brother of Naga of Bharadvaja-gotra gave 25 cows for a lamp and land for the food offerings in the temple of Brahmesvara. Makara sankranthi was very much held in esteem and considered as most auspicious by the Kakatiyas and their chiefs particularly Gangaya sahini.[107]

On this day the Kakatiya chief Gandapendaru Gangaya-sahini is stated to have made a grant of lands in the villages of Boyalapalli and Redlapalli to god

Mulasthanadeva of Tripurantakamu, for merit of Ganapatideva-Maharaja. The details of the date Saka 1175, Sadharana, Pushya, su.5, Thursday, Makara sankranti. The cyclic year Sadharana corresponded to Saka 1172 but the Makara sankranti in that year did not occur on Pushya, su.5. In Saka 1175 however, the given details correspond to 1253 A.D., December 25, Thursday, on which day the samkranti and tithi commenced .The Saka or the cyclic year cited appears therefore to be a mistake.[108]

A record states that Bhandaru Konda-Nayaka and his son Virabhadra –Nayaka built a Karavala bhairava-mandapa and gave some money also. There is a reference to the consecration of the image of Uma Sahithamoorthy in the temple of Vasuki Ravi Somesvara of Duttika dated Saka 1177 (1255 A.D.,) [109]

According to Juttiga record dated Saka 1181, Ashadha, su.5, Friday, Uttarayana correspond to 1258 A.D., June 7, Friday. A certain Kommasani and her sons Virapa-Nayaka and Indu-sekhara Nayaka presented a perpetual lamp to the temple of Vasuki Ravi Somesvara of Duttika and also gave some land for its upkeep on the day of uttarayana sankranti.[110]

An inscription of a Kadava chief KoppuramJinga dated in the 17th year (1259 A.D.) mentions the observance of uttarayana festivals every yeare by providing food offerings to the god Tiruvidaikkali-Nayanara Tirukkovalur.This give us evidence that importance has been given to water bodies. Here Nenmali alias Miladamahadevich-chaturvedimangalam where from the donatrix (lady donor) hails.[111]

It is in a Kakatiya record from Sekuru dated Saka 1187, Krodhana, Makara Sankranti corresponding to 1265 A.D., December 26, Saturday that the grant of land is said to have been made to the temple of Somesvara-Mahadeva of Chekuru for the merit of Rudrayya .[112]

A record dated Saka 1192 = 1279 A.D., states that the Kakatiya chief Maha-mandalesvara Parichchheda Alladanathadevaraja and his younger brother Bhimaraja donated 25 cows for a perpetual lamp in the temple of Tripurantaka-Mahadeva.[113]

Two records belonging to Hoysala Vira Narasimhadeva from Chamarajanagara are dated in the Saka year 1201, Sunday, the 15th day of the bright

fortnight of Pushya, in the year Vishu corresponding to 1279A.D. refer to the grant made on the occasion of uttarayana sankranti.[114]

A Kakatiya record from Attirala is dated Saka 1201 (1279 A.D.,) seems to refer to a gift of land to the temple of Parasuramesvara of Araturevula for the merit of Ambadeva Maharaja on the day of Makara sankranti.[115]

According to Nanduru record dated Saka 1202, Pramadi, December 26, Tuesday corresponding to 1279 A.D., one mahapradhani Ganapaddeva maharaja is said to have made a gift of land to the temple of Kanthisvara and Dasamisvara of Nanduru.[116]

A Tripurantakam record dated Saka 1210, Sarvadhari, Pushya, su.1, Sunday, corresponding to 1288 A.D. states that a certain Savadara Ambaya-reddi gave 50 cows, one salaya bullock and breeding bull for a perpetual lamp to be maintained in the temple of Tripurantakadeva on the day of Makara- Samkranti.[117]

A Mallipudi record dated Saka 1219, December 26, Thursday, corresponging to 1297 A.D., states that Prithnivi-Vallabhadeva kumara, gave 50 cows for a perpetual lamp in the temple of Agastyesvara.[118]

A Kakatiya record from Mogallu dated Saka 1237, Rakshasa, December 27, Saturday corresponding to 1315 A.D., states that Attili Devaya-Raddi put up a stone pillar in the nandi-mandapa of the temple of Bhimesvara of Mongolanu and donated lands for a perpetual lamp to the temple of Nandikesvara.[119]

A Kakatiya record dated Saka 1237(1315 A.D.,) states that Attili Peda-poti Raddi caused to have built a stone pillar in the Nandi-mandapa of the temple of Bhimesvara at Mongolanu and also gave 5 puttis of land to Pramathakavi sirigiri –Ayyangaru.The land and the house site were also granted as sarvamanya.[120]

A record from Koppa taluk states that when Devaraya, son of Harihara II, the Vijayanagara king granted lands at Magheyabayal to Vidyanathadeva. The details of date viz., Saka 1330, Sarvadhari, Pushya, su.10, Thursday, Uttarayana sankranti correspond to 27 th December, 1408 A.D.[121]

Two records dated in Saka 1342, the dark fortnight of Margasira, in the year Jaya, corresponding to 1420 A.D., refer to a grant made on this occasion to the god at Kumarabidu.[122]

A Sanskrit inscription refers to the restoration of agrahara called Somanatha-pura by Nanjaraya-odeya, under the orders of Narasimha, son of Isvara, of the Saluva family. This record is dated in Saka 1419 corresponding to 1497 A.D.

A copper plate record in Nagari characters and Sanskrit and Kannada registers a grant of several villages income from taxes etc., to the god Triyambakesvara of Triyambakapura by the Vijayanagara emperor Krishnadevaraya.It is dated Saka 1443, Vishnu, Pushya su.3, Makara sankranti corresponding to 1521 A.D., December 2.[123]

The temple of god Triyambakesvara further received money from the king Krishnadevaraya on the occasion of Makara sankranthi in the Saka year 1444,(1521 A.D.). December 28. A gift was made on the eve of Makara sankranti in the presence of god Virupakshesvara on the bank of the river Tungabadra for the welfare of the king and for the worship and offerings.[124]

A record from Srirangam registers an endowment of 40 pon of gold by Srirangarajan Somayaji Tirukkali Kunridasan for daily offerings to god on specified occasions. The details of the date Saka 1457 expressed by the chronogram Samavedye, Manmatha, Uttarayana, su.5, Purattadi, Wednesday correspond to 1535 A.D., December 29.[125]

A record from Chandragiri dated Saka 1459, Hevilambi, Makara, Friday (1537 A.D.), on the day of Makara sankaranti, falling on ekadasi days records the gift of money for the day and sandhi lamps, to the deity Chidamba (ra) Isvaramudaiya Nayinar.[126]

2.2 KUMBA (AQUARIUS) SANKRANTI:

Stone set up in front of the Narasimha temple in Dodda kunche on the day of Kumbha-sankranti Tuesday, the 2nd day reckoned from full moon day of Magha, in the third year of the coronation of Satyavakya-Kongunivarmma-Dharmma-Maharajadhiraja, the illustrious Permma [nadi], lord of the excellent city of Kovalala lord of Nandagiri, Permmadi and prabhukamayya being granted to the mahajanas of Kunche the tax on ghee (tuppadere) [127]

Another record dated the third year of Permmanadi, Magha ba.2, full moon day, Tuesday, refer to Kumbha-sankranti. It is in characters of 9th century. The record may be assigned to Rachamalla II, and the given details equated with 873 A.D.,January 20, Tuesday. The tithi would be ba.3 and the sankranti occurred on the next day.[128]

2.3 MINA (PISCES) SANKRANTI:

This inscription states that the Vijayanagara king Narasimha-maharaja, in course of performing the sixteen Mahadanas, a gift called mahabhuta-ghata was made. In the presence of god Ranganatha on the bank of the Chandra- pushkarani situated between the two kaveris, he bestowed the office of acharyaka upon Ranganatha-bhatta, son of Lakshimnatha- dikshita, of Bharadvaja- gotra, Apastambha-sutra and yajus-sakha, well-versed in sixteen darsanas and made a gift of the village Honnakahalli in kudugu-nadu of Terakanambe-nadu as an agarahara re-named as chikkarayapura. The record, slightly damaged in the beginning, is dated saka 142[7], Krodhana, Phalguna su.4, Mina-sankranti. The date falls in 1506 A.D February 27. But Mina-sankranti fell on Feb.24.[129]

2.4 MESHA (ARIES) SANKRANTI:

A record of Eastern Ganga king from Narayanapuram is dated in the Saka year 1040, Mesha, su.13, Monday, Vishu sankranti, corresponding to 1117 A.D., April 16, Monday, and refers to the gift of five madas by Surama, wife of Permadiraja, for the upkeep of a perpetual lamp in the temple of Nilisvara at Nilumjevu on the day of Vishu sankranti. [130]

Imperial chola record from Kottapakonda dated Saka 1075, March 24, Tuesday, 1153 A.D., refers to the gift of inupa yedlu by Datyana-Peggada-Somana the Mudiseli of Boddana Naraya, to the temple of Trikotisvara of Kavuru on the day of Vishu sankranti. [131]

Imperial Cholas have the practice of observing the Vishu sankranti.Records from Moparru,Pedakonduru,Velpuru and Tripurantakam dated between Saka 1092 and 1095(1170 A.D and 1173 A.D) refer to the gift made by the officers of that family to the respective deities for the perpetual lamp in the temple on the occasion of vishu sankranti. [132]

An inscription belonging to the reign period of Hoysala king Viraballala records a grant of certain lands to the god for the worship and services by Chengotta-mahadeva.The details of date Saka 1104, Plava, Chaitra, su.5, Monday, Vishu sankramana, correspond to 1181 A.D., March 22.[133]

Similar to Vishu sankranti, Mesha sankranti was also observed as auspicious in Andhra for making grants.The imperial cholas and the Kakatiyas patronised the observance of Mesha- sankranti.

Imperial Chola record from Muktyala dated Saka 1129, March 25, Sunday, 1207 A.D., states that Kesava chief of Ivani-Kandravati gave 25 cows for a perpetual lamp in the temple of Muktisa.[134]

A Kakadiya record from Idupulapadu dated Saka 1131, corresponding to-March 24th, Tuesday, 1209 A.D. states that the village of Idupulapadu in the Karma-rashtra was originally granted by Mukkanti Pallava to certain Brahmins of Kanva Sakha and that king Ganapatideva regranted it to the Brahmins.[135]

A record belonging to the reign period of Hoysala Viraballala refers to the consecration of gods Chalesvara and Gudesvara and to a grant of lands to the same gods for worship, offerings and renovation in the temple and for the distribution of food etc., The details of date Saka 1138 Yuva, Pushya, amavasye, Sunday, Vishu sankramana, wednesday, correspond to 1216 A.D, January 20. [136]

A Kakatiya record from Ghantasala dated Saka 1142 , Vikrama, Chaitra, ba.15, Thursday, Vishu sankramana corresponding to 1221A.D., states that Marisetti of Middikula gotra gave 25 cows and one breeding bull for a perpetual lamp in the temple of Jaladhisvara of Ghantasala.[137]

A record dated Saka 1154= (1232 A.D.,) Kanya, Prajapati year, Mesha Sankranti indicates that Jupiter happens to be in Virgo sign. It occurs once in 12 years.This is normally observed in Kerala. The place of the inscription is though not in the coastal area, it happens to be on the bank of the river Krishna.The record states that the donor of the inscription before making grant as the Sivayogi did penance at Indrakila hills by fasting. They donated 25 goats for the perpetual lamp to god Mallesvara Mahadeva of Vijayawada.The inscription refers to Mallaboya as the donor who made gifts. [138]

A Kakatiya record from Tripurantakam dated Saka 1178, March 25, Saturday or September 28, Thursday corresponding to 1256 A.D., state that one Marama Breka gave 12 cows for half a lamp in the temple of Kesavadeva of Kolavennu.[139]

A Kakatiya record from Kondanayanivaram dated Saka 1180 , March 25, Monday corresponds to 1258 A.D., seems to record that one Muppi Setti gave 25 cows and 7 tums of land for a perpetual lamp in the temple of Brahmesvara.[140]

The Kakatiya record from Tripurantakam dated Saka 1183 , Durmukha, Chaitra, ba.6, Saturday, corresponding to 1261 A.D., March 26, refers to the occurrence of Vishu sankranti and seems to state that induluri Gannaya ,son of Ganapaya, gave 25 cows for a perpetual lamp in the temple of Tripurantakadeva on that day.[141]

Another Kakatiya record from Mandanam dated Saka 1201, Pramadi, Chaitra, su. 13, Sunday, corresponding to 1279 A.D., March 26 states that a certain Amarisetti gave 25 cows for a perpetual lamp in the temple of Ramisvara of Mandanam.[142]

Inscription from Magallu and Kopparam dated Saka 1243 (1321 A.D) and

Saka 1245 (1323 A.D.) respectively mention the Mesha-sankranti on which day the grants were made for different purposes.[143]

A record from Bachahalli dated Saka year 1518, Hevilambi, Phalguna, ba.12, Mesha sankranti, March 24, (1598 A.D.) , the mahamandalesvara Ramaraja Tirumala-rajayya granted the village of Bachahalli as rent free village with wealth and grains.[144]

2.5 VRISHABHA (TAURUS) SANKRANTI:

An early Ganga plate of Western Ganga king Sripurusha is said to have granted a village for the bramanas. The details of date are Saka 672 the 25th cyclic year, Vaisakha, su.10, Monday and the constellation Uttara-Phalguni and Vrishabha sankranti. On the day of Vrishabha sankranti gifts of land, garden, a housesite and oil mills have been made by dandanayaka Maneverggade Nacharsasa, was feudatory of mahamandalesvara Vira Gomkarasa and of Taila III.This information is available from a record from Chitapur dated Saka 1084 (1162 A.D.) [145]

A record of Hoysala Narasimha I dated Wednesday, April 22nd, Saka 1081 corresponding to 1159 A.D., refers to ViragangaKadamba-Vishnuvardhana and to the gifts of lands made to the god Mulasthana Suleyakere on this day.[146]

2.6 MITHUNA (GEMINI) SANKRANTI:

A record of Eastern Ganga ruler from Narayanapuram dated Saka 1075 (=A.D.1152) records gift of a perpetual lamp in the temple of Nilisvara at Nidujeruvu on the day of Mithuna sankranti.[147]

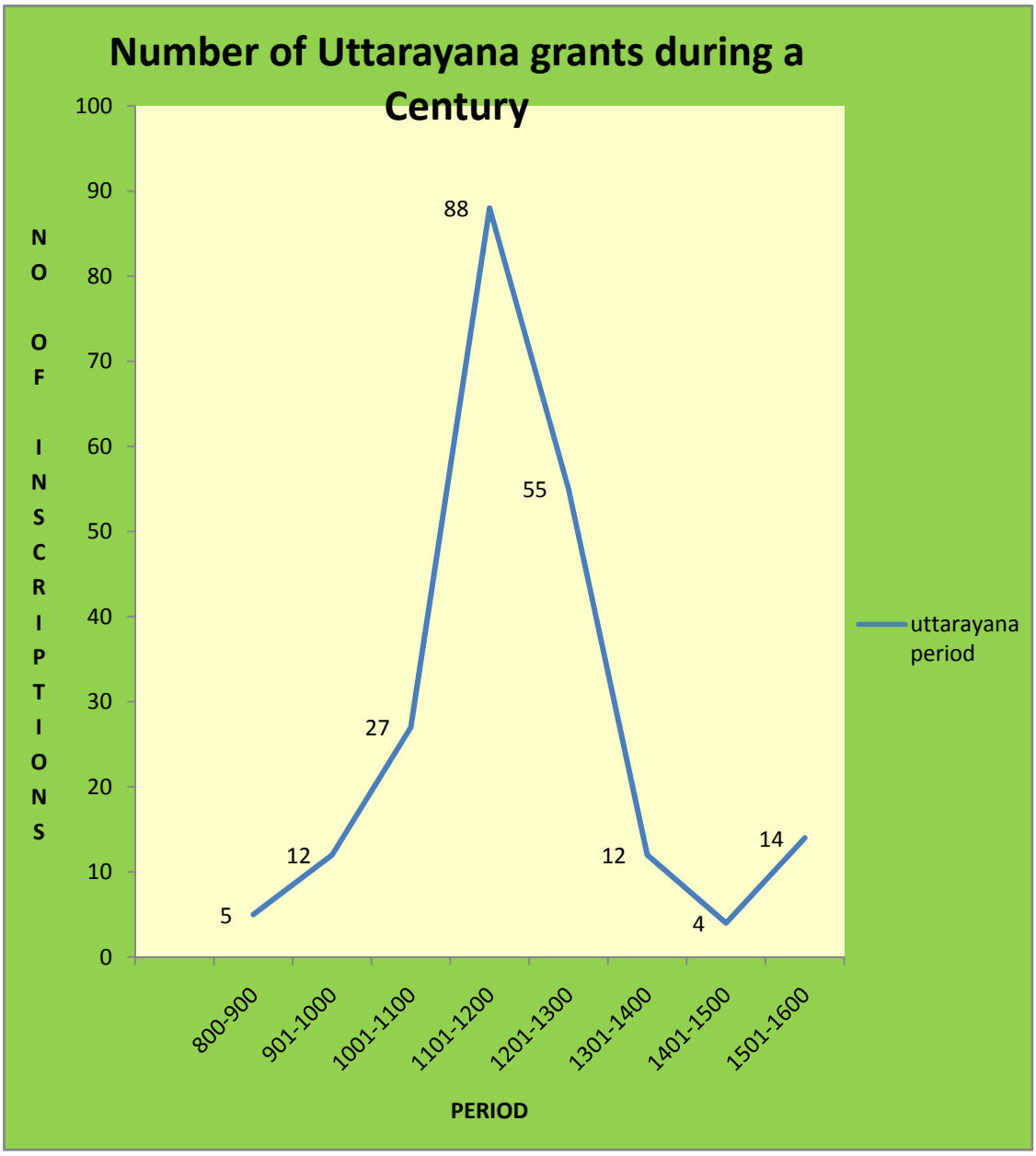
Table-2.1

Number of Uttarayana grants during a Century

Period	**Number of Uttarayana grants during a century**
800-900	5
901-1000	12
1001-1100	27
1101-1200	88
1201-1300	55
1301-1400	12
1401-1500	4
1501-1600	14

Graph- 2.1(a)

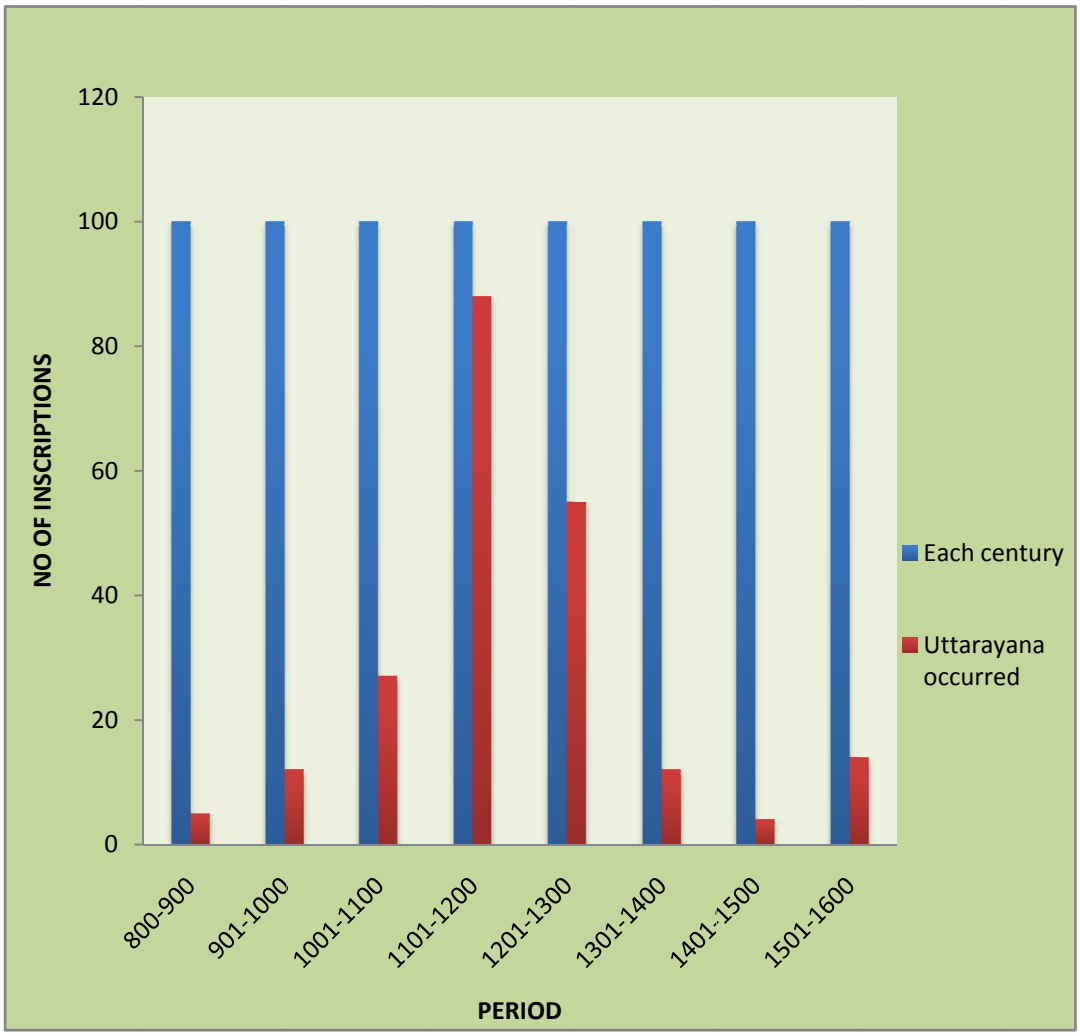
Number of Uttarayana grants during a Century



Graph-2.1 (b)

Number of Uttarayana grants during a Century

(Compared with each century)



Graphs 2.1(a) and 2.1(b) exhibit the curve denoting the number of inscriptions in which uttarayana has been mentioned. Further the maximum number of inscriptions that referred to uttarayana is 88 that are occurred in 1100-1200 A.D., i.e 12th century A.D. and the lowest number of inscriptions referring to uttarayana is 4 that can be witnessed during 1400-1500 A.D., i.e 15th centuryA.D.

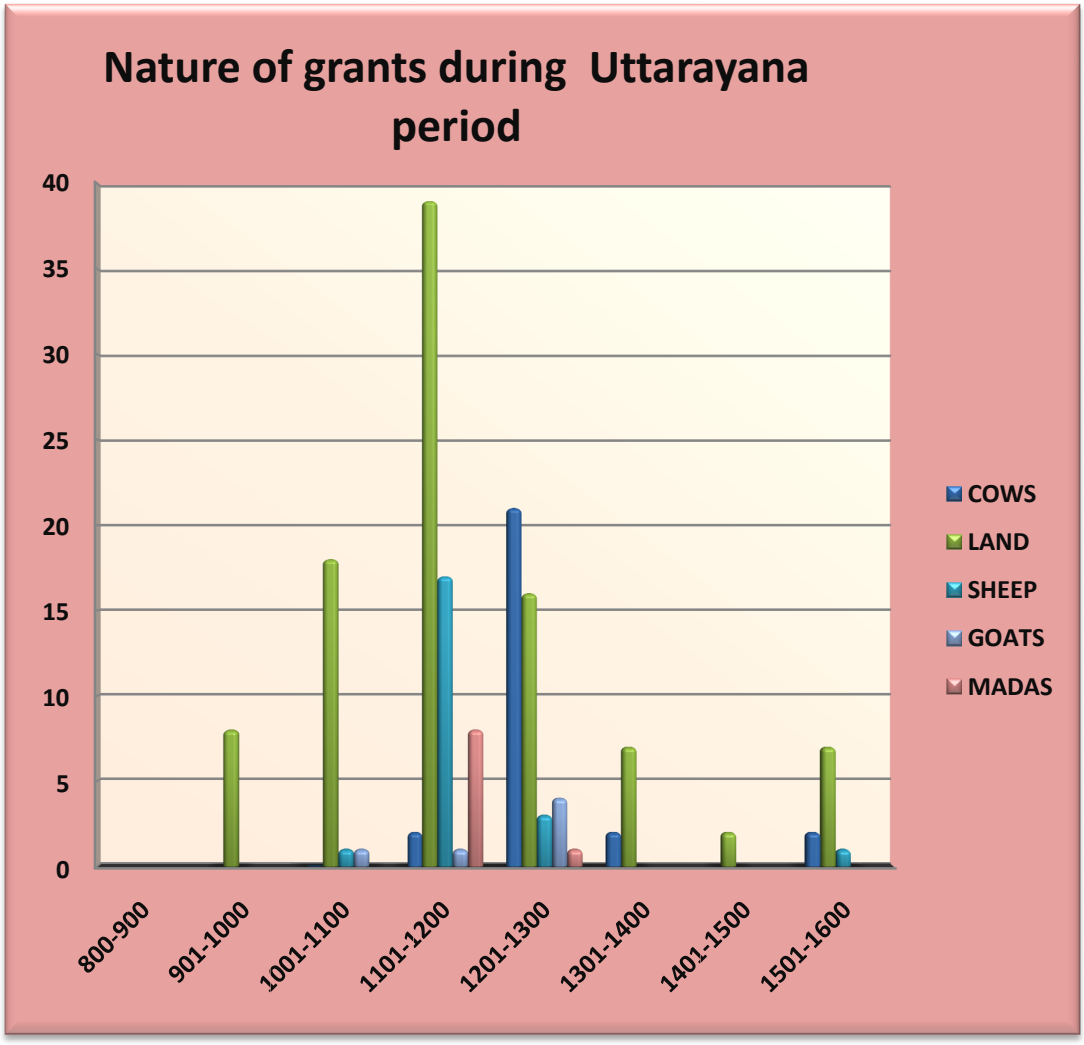
Table-2.2

Nature of Grants during Uttarayana period

Period	Nature of Grants				
	Cows	**Land**	**Sheep**	**Goats**	**Madas(money)**
901-1000	0	8	0	0	0
1001-1100	0	18	1	1	0
1101-1200	2	39	17	1	8
1201-1300	21	16	3	4	1
1301-1400	2	7	0	0	0
1401-1500	0	2	0	0	0
1501-1600	2	7	1	0	0

Graph- 2.2

Nature of grants during Uttarayana period



The land grant are considered as permanent (wadada) and the resultant effect is more.The land grant are given in the temple for various reasons of which the grant made for the maintainance of perpetual lamp is more sacred and the benefit is as long as Sun and Moon endures.

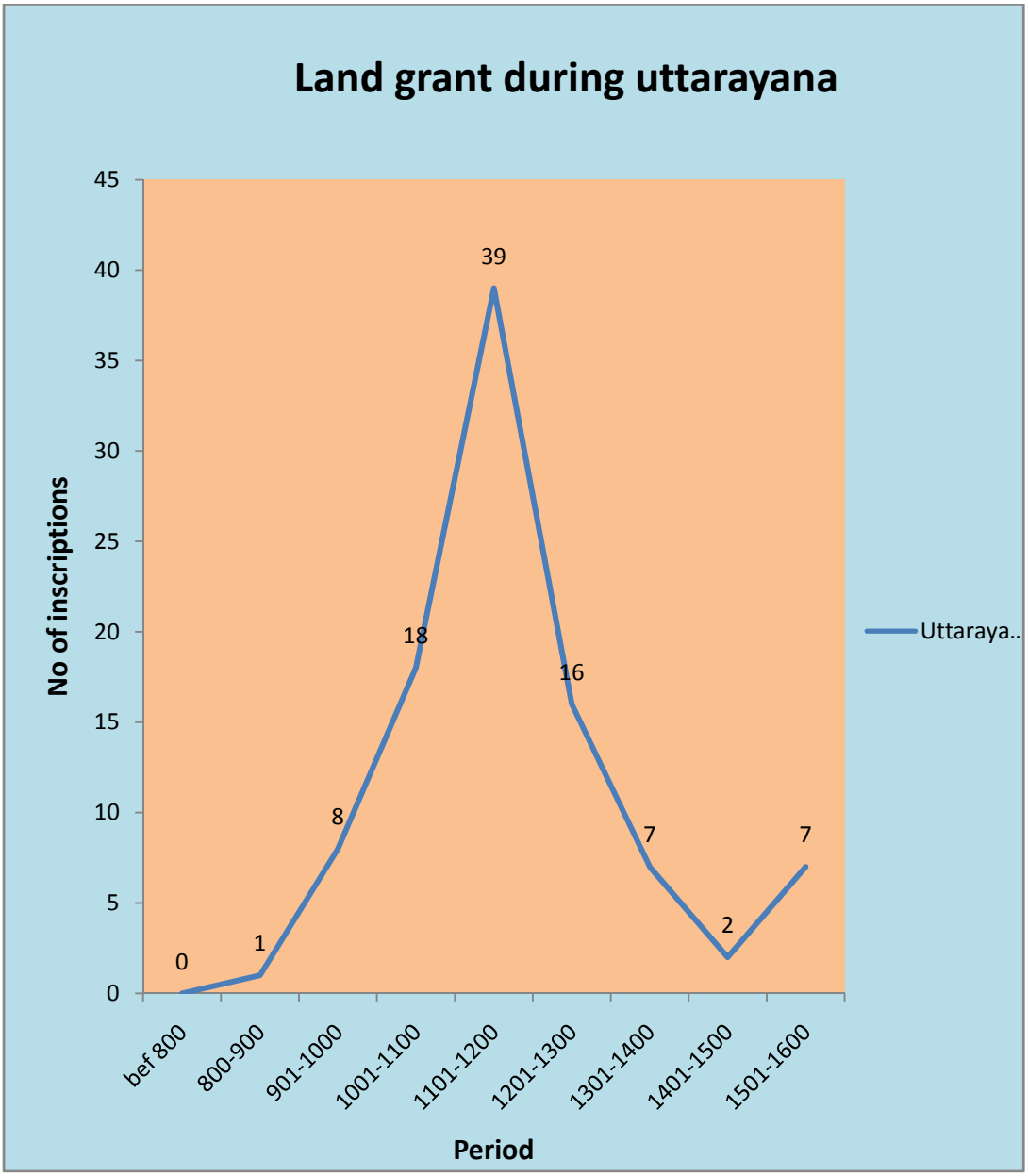
Table- 2.3

Number of land grant for occurrences during Uttarayana

Period	land grant for occurrences during Uttarayana
800-900	1
901-1000	8
1001-1100	18
1101-1200	39
1201-1300	16
1301-1400	7
1401-1500	2
1501-1600	7

Graph- 2.3

Number of land grant for occurrences during Uttarayana



This graph exhibits the curve denoting the land grants have been made on the occasion of uttarayana.Further the maximum number of inscriptions that referred to land grants is 39.This occurred in the middle of 12th century.The lowest number of inscriptions referring to land grants on the occasion of uttarayana is only 2.This can be witnessed during the middle of 15th century. The increase in land grant in the 12^{th} century gives us a clue that the yield out of the land is perpetual and useful.

The reason for the steeprise in the number of occurrences to uttarayana and grant made on these occasions mostly falls during the 12th century when the king like Hoysala Vishnuvardana and Eastern Ganga king Ananta Varman ganga,Kulottunga chola etc.,ruled.During this period the great astrologers like Bhaskaracharya-II, preceptor like Ramanuja lived.Their presence might have influenced the rulers to opt for making donations.In all probability they might have served the royal court as astrologer and so on.Also the reason for the steep down fall for the grants made on the occasion of uttarayana has come down ,due to the fact that they would have lacked the direction of the astrologer and also to the own anguity. Radical disturbences are more in number. It is not impossible to suggest that the number of references for the grant made on the occasion of Uttarayana .The reason for the least number of donations made on this occasion show that the Vedic Scholars for the receipt of the grant has reduced.

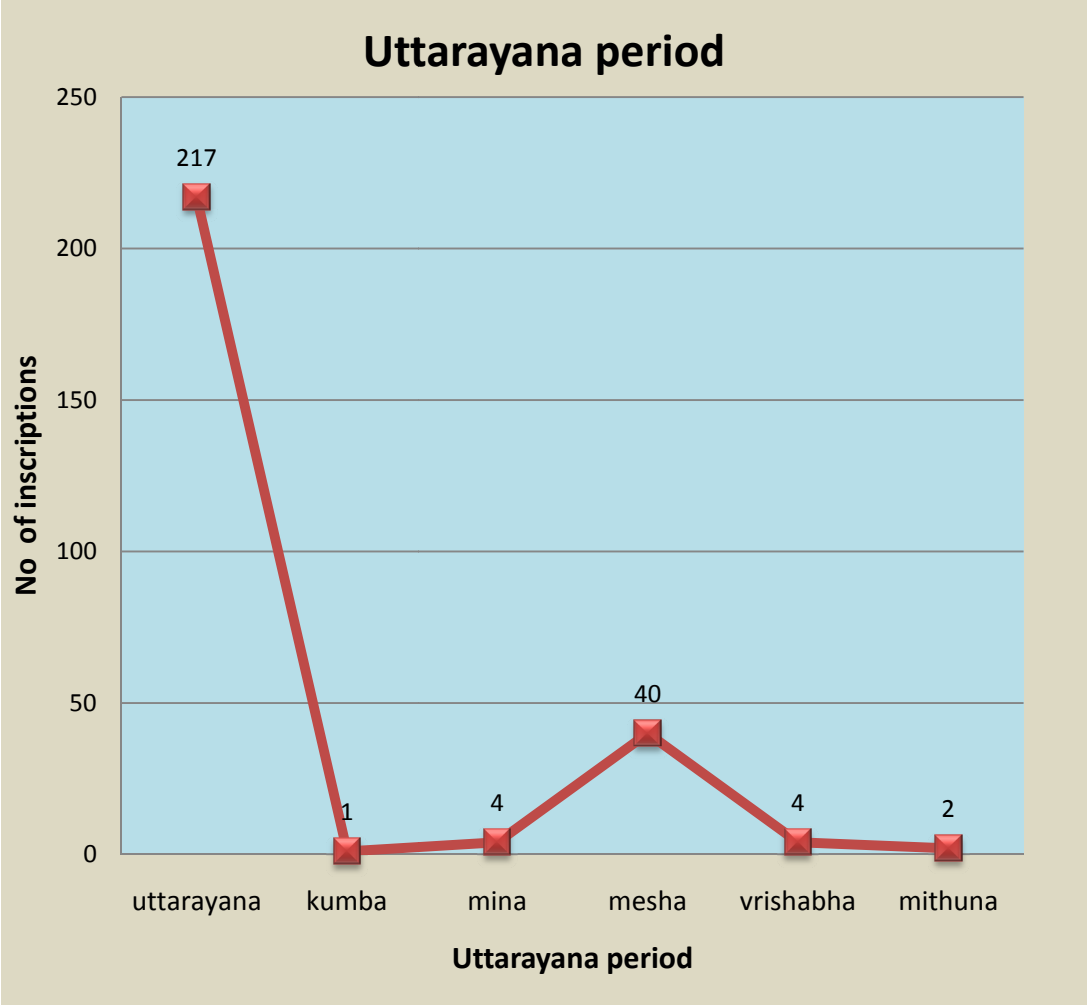
Table- 2.4

Total number of inscriptions during uttarayana period

Uttarayana period	**Total number of inscriptions**
Uttarayana Sankranti	217
Kumbha Sankranti	1
Mina Sankranti	4
Mesha Sankranti	40
Vrishabha Sankranti	4
Mithuna Sankranti	1

Graph- 2.4

Total number of inscriptions during Uttarayana period



This graph exhibits the curve denoting the number of inscriptions in Uttarayana period. The maximum number of inscriptions occurred in Uttarayana sankranti because Uttarayana is the most auspicious occasion.It is the time of prosperity and the reason why the rulers and other officials chose the period for making grants.

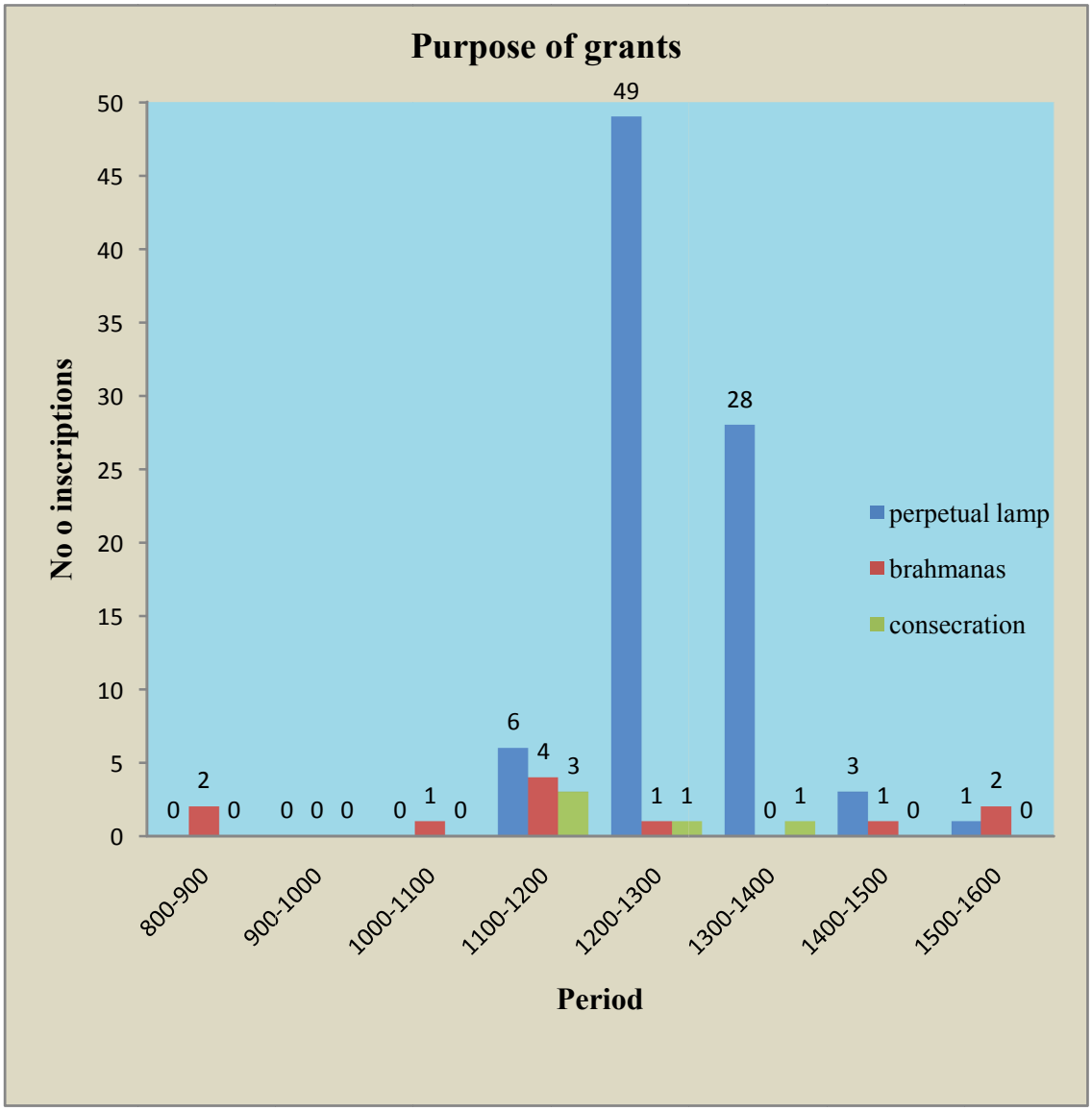
Table- 2.5

Purpose of grants during Uttarayana period

Period	Purpose of grants during Uttarayana period		
	Perpetual lamp	Vedic Scholars	Consecration
800-900	0	2	0
900-1000	0	0	0
1000-1100	0	1	0
1100-1200	6	4	3
1200-1300	49	1	1
1300-1400	28	0	1
1400-1500	3	1	0
1500-1600	1	2	0

Graph- 2.5

Purpose of grants during Uttarayana period



The accrual of merits is more for perpetual lamp than other kind of grants. Even the parihara /compensation that have been observed so that more preference is given for the grant made for maintaining the perpetual lamp.

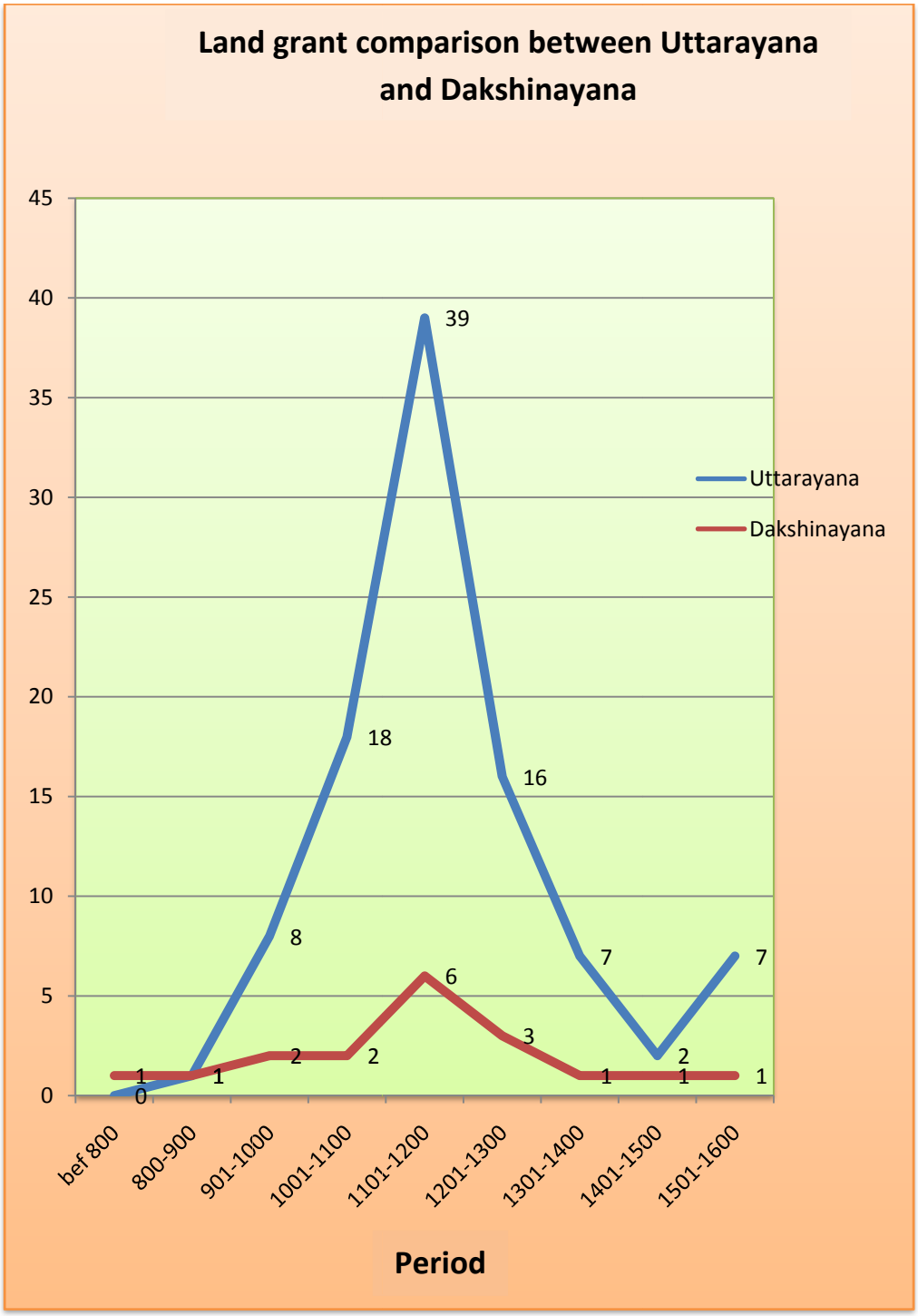
Table- 2.6

Comparison of land grants in Uttarayana and Dakshinayana

Period	Land grant for occurences	
	Uttarayana	Dakshinayana
bef 800	0	1
800-900	1	1
901-1000	8	2
1001-1100	18	2
1101-1200	39	6
1201-1300	16	3
1301-1400	7	1
1401-1500	2	1
1501-1600	7	1

Graph – 2.6

Comparison of land grants between Uttarayana and Dakshinayana



2.7. CONCLUSION

One auspicious occasion that is commonly observed in South India is Sankranti.Both the sankranti namely Uttarayana and Dakshinayana are observed as auspicious and celebrated according to the ritualistic practices.Gits are made on both these occasions as a sort of pariharas or compensation.

The purpose of the gift was made mainly for maintaining the perpetual lamp. The reason behind this is perhaps to get the accrual of the benefits by choosing Uttarayana sankranti as auspicious. Also the reason may be attributed to the nature of donations like cows, goats; buffuloes (inupuedlu) because of the yield they get out of these seems to be more in the Uttarayana period, so it is on account of onset of winter season.

Also the winter season appears to be a fertile climate for more crops and giving chance to graze by the cows and the other animals.

NOTES AND REFERENCES:

[1] *Ipuru plates of Mangi-yuvaraja*

[2] *Ep. Carn : Vol 4; p. 757*

[3] *Alampur record from Mahbubnagar*

[4] *Kadalur grant of Marasimha*

[5] *IWG NO: 159*

[6] A.R.Ep.year 1916-17, No: A 22

[7] *Ep .carn ; Vol 4 ,p. 65*

[8] *Ibid., Vol 4, p. 87*

[9] *SII., Vol XIX ,No: 235*

[10] *Ibid., Vol XIX :No: 379*

[11] *Ibid., Vol XIX ,No: 409*

[12] *Ibid. Vol X ,No: 4*

[13] *Ep. Carn : Vol 3, p. 51*

[14] *Ibid., Vol 6, p. 406*

[15] *Ibid., Vol 3, p. 581*

[16] *SII., Vol XXIII ,No: 185*

[17] *A.R. Ep., 1960-61 : No: 415*

[18] *SII., Vol X, No: 6*

[19] *A.R. Ep., 1960-61 : No: 456*

[20] *Ep. Carn: Vol 9 :p. 839*

[21] *Ibid., Vol 9: p. 475*

[22] *A.R.Ep.,1960-61 : No: 417*

[23] *A.R.Ep.,1914 : No: 442*

[24] *A.R.Ep.,1962-63 : No:815*

[25] *A.R.Ep.,1927-28:No: 33*

[26] *A.R.Ep.,1927-28: No: 26*

[27] *A.R.Ep.,1914: No: 475*

[28] *A.R.Ep., 1909;No 726;*

[29] *SII., Vol XXVI ,No :777*

[30] *Ibid. Vol X, No: 12*

[31] *A.R.Ep.,1962-63: No: 189*

[32] *Ep.carn. Vol 12, p. 212*

[33] *Ibid. ,Vol 12 , p.100*

[34] *SII ., Vol X, No: 652*

[35] *Ep. Carn. Vol 12 ,p. 54*

[36] *A.R.Ep.,1960-61, No 520*

[37] *A.R.Ep.,.No: 578;*

[38] *SII.,Vol X ; No :70*

[39] *A.R.Ep.,1960-61 :;No : 527*

[40] *A.R.Ep.,: 1905; No : 263;*

[41] *SII., Vol X No: 68*

[42] *Ep. Ccarn.Vol 7; p. 282*

[43] *Ibid., Vol 6; p.4*

[44] *SII., Vol X ;No : 80*

[45] *Ep . Carn. Vol 10;p. 537*

[46] *SII .,Vol X; No : 664.*

[47] *Ep.Carn. Vol 8; p. 401*

[48] *Ibid., carn. Vol 8 p. 286*

[49] *SII .,vol X ; No; 666*

[50] *Ibid., Vol X; No: 667*

[51] *Ep.Carn.,Vol 6. p. 323*

[52] *Ibid. ,Vol 10 ,p. 99*

[53] *Ibid., Vol 5 ;p. 460*

[54] *Ibid., Vol 11,p. 136*

[55] *SII., Vol X; No : 692*

[56] *Ibid. Vol X; No: 110*

[57] *Ibid. Vol XXVII; No: 29*

[58] *Ibid. Vol X, No 114*

[59] *Ibid. Vol X; No: 695*

[60] *Ep.Carn. Vol XII ;p. 359*

[61] *SII., Vol X; No: 328;*

[62] *Ibid.,Vol X; No : 126*

[63] *Ibid., Vol IV; No :676*

[64] *Ibid.,Vol X ;No: 703*

[65] *Ibid. ,Vol X; No: 129*

[66] *Ibid., Vol X ;No: 132*

[67] *Ep. Carn: Vol 12; p.208*

[68] *SII., Vol X; No : 136*

[69] *Ibid., VOL X; No 139*

[70] *Ibid. ,VOL X; No : 141*

[71] *Ep. Carn: VOL 10, p. 307*

[72] *SII .,VOL X; No: 150*

[73] *Ibid., VOL X: No 151*

[74] *Ep. Carn: Vol 4: p. 496*

[75] *Ibid. , Vol XII: p. 378*

[76] *SII .,Vol: X; No 160*

[77] *Ibid., Vol X: No: 161*

[78] *Ibid., Vol X; No: 166*

[79] *Ibid., Vol : X: No: 162*

[80] *Ibid., Vol X : No: 169*

[81] *Ibid., Vol IV; No: 680*

[82] *Ibid., Vol: X; No 176*

[83] *EP. Carn: Vol 6; p. 17*

[84] *SII., Vol X: No 177*

[85] *Ibid. Vol :X; No :183*

[86] *Ibid. Vol X : No: 195*

[87] *Ibid.Vol X; NO 192*

[88] *Ep. Carn: VOL 5; p. 317*

[89] *Ep. Carn: VOL 8, p.336*

[90] *SII.,Vol X ; NO : 710*

[91] *Ep. Carn Vol 4: p. 589*

[92] *SII., Vol; X: No: 241*

[93] *Ep. Carn., Vol 3: p. 79*

[94] *SII., VOL X: No 206*

[95] *Ep. Carn Vol XII: p. 346*

[96] *SII., Vol : X: No249*

[97] *Ibid., Vol IV: No 729*

[98] *Ibid., VolX: No ; 270*

[99] *Ep. Carn; Vol 10, p. 70*

[100] *SII., Vol X: No: 284*

[101] *Pd No:183*

[102] *SII., Vol X: No: 289*

[103] *Ep. Carn : Vol 3; p. 336*

[104] *SII., Vol X: No:297*

[105] *Ibid., Vol X: No: 301*

[106] *Ibid., Vol X: No: 327*

[107] *Ibid., Vol X: No ; 333*

[108] *Ibid., Vol X: No: 332*

[109] *Ibid., Vol X: No: 348*

[110] *Ibid. ,Vol X: No:364*

[111] *SII., Vol XII: No: 203*

[112] *Ibid., Vol X: No: 405*

[113] *Ibid.,Vol X: No: 430*

[114] *Ep. Carn : Vol 4: p. 592*

[115] *SII .,Vol X :No: 448*

[116] *Ibid., Vol X: No:450*

[117] *Ibid., Vol X: No: 460*

[118] *Ibid.,Vol X: No:481*

[119] *Ibid., Vol X : No: 512*

[120] *Ibid., Vol X: No:513,512,511,518,515,514,516,510*

[121] *Ep. Carn Vol XII:p. 319*

[122] *Ibid., Vol 5: p.831*

[123] *Ibid., Vol 3: p. 116*

[124] *Ibid., Vol 3: p. 609*

[125] *SII., Vol XXIV ; No: 428*

[126] *Ibid., Vol XVII: No: 267*

[127] *Ibid., Vol 8, p. 499.*

[128] *Ibid., Vol 8, p. 61*

[129] *Ibid., Vol 3, p. 24*

[130] *SII., Vol X; No :659*

[131] *Ibid. ,Vol X; No 127*

[132] *Ibid. Vol X; N0 : 172,175,178,186*

[133] *Ep. Carn Vol 12, p.83*

[134] *SII., Vol X ;No :210*

[135] *Ibid., Vol X; No: 248*

[136] *Ep. Carn, Vol 12, p. 44*

[137] *SII .,Vol X; No: 264*

[138] *A.R .Ep. 1892 No : 288 , 742*

[139] *SII .,Vol X; No: 353*

[140] *Ibid., Vol X; No: 357*

[141] *Ibid., Vol X; No: 394*

[142] *Ibid., Vol X ;No: 446*

[143] *Ibid.,Vol X; No : 531,533*

[144] *Ep. Carn: Vol 3: p. 142*

[145] *Ep. Carn: Vol 11 ;p. 22*

[146] *Ibid. Vol 11: p. 183*

[147] *SII., VolX ;No: 706*

CHAPTER -3

3.1 DAKSHINAYANA PERIOD WHILE MAKING GRANTS:

Dakshinayana period is between Karkataka sankranti and Makara sankranti. It is the six month period between summer solistice and winter solistice when the sun travels towards the south on the celestial sphere . It is observed when the sun's transits from Mithuna rashi(Gemini) to the Karkataka rashi (Cancer). This day is the Solar calendar's fourth month and is known as Karkatakam month in Malayalam, Aadi in Tamil.

The following are the few instances quoting in Dakshinayana (cancer) sankranti:

One of the earliest references to the observance of Dakshinayana can be noticed in a record from Pottipadi in Cuddapah district. This record refers to Dhavaleyarasa, of the Bana family as ruling the area and mentions Ponmanapadi and registers the gift to one Punya-bhatta .It is dated in Saka 807, Sobhakrit, Ashadha, ba.13, Dakshinayana sankranti. The details are irregular. The cyclic year correspond to Saka 805 (883 A.D.)when the sankranti occurred on June 24th, Monday, the tithi being Ashada purnima. In Saka 807(885 A.D.) the sankranti occurred on June 24th ,Thursday the tithi being Ashadha su.9.The former might be the intended date.[1]

A Chola record of king Parantaka-I from the Vishnu temple at Tirumalpuram in North Arcot district, dated in his 39th year (946 A.D.) mentions that a sale on this date of 12 putti of tax-free garden land at Pidariyar Kulattur to the temple of Paramasvami at Govindapadi.[2]

Instances quoting to Uttarayana and Dakshinayana together in the inscriptions are not far to seek. In a record from Kalahasti belonging to the 4th year, 1016 A.D., of the reign period of Chola king Rajendrachola I records the gift of 6 Kalanju of gold to the food offerings to god Tirukkalatti-mahadeva on the day of Uttarayana and Dakshinayana sankranti.[3]

Another record from Achanta in West Godavari district refer to the grant of topes made to the temple of Ramesvara .The details of the date Saka 1034, correspond to 1112 A.D., June 26, Wednesday.[4]

A record from Karnataka registers the grant of the portion of the money to god Kusumesvara by the organisation of tailors (Chippigagottali). This record falls in the period of Hoysala Vishnuvardhana and dated in the 58th year of Chalukya- Vikrama era, Siddharthi, corresponding to 1139 A.D., June 27,Tuesday.[5]

A record from Kolluru states that in the 8th year of Kulottunga-Choda II Indulasani Pedudama, daughter of Kosanasani made a gift of 5 Rajanarayana-gadyanas for a perpetual lamp to the temple of Anantisvara at Kolluru. The details of the date Saka 1062, Bhadrapada, Su.5, Monday, correspond to 1140 A.D., August 19, Monday.[6]

A record from Ghantasala belonging to Rajaraja states that a certain Somarasa gave 5 Rajaraja-madas for a perpetual lamp in the temple of Jaladhisvara at Ghantasala. The details of the date Saka 1081,14th year of Rajaraja, corresponding to 1159 A.D., June 27,Saturday.[7]

A Siripuram record states that the Katya peggada granted 55 sheeps for a perpetual lamp in the temple of Ramesvara at Siripuram. The details of the date Saka 1094, corresponding to 1172 A.D., June 26, Monday.[8]

A Jonnalagadda record in the temple of Amaresvara dated Saka 1095(1173 A.D.,), refers to the grant of land to the temple at Vallabhesvara of Jonnalagedda. [9]

An imperial Chola record from Bhimavaram in West Godavari district refers to the gift of 30 cows to the temple of Svarnesvara is dated Saka 1096 (1174 A.D.,).[10]

An inscription of Hoysala Ballala II refer to the grant of lands by mahapradhana Demayya for the god Kalideva of Yadavanahalli on the occasion of Karkataka sankranti in the cyclic year Hemalambi, in Saka 1099. The other details of

date viz., Ashadha, ba.13, Sunday, Karkataka-sankramana seems to correspond to 26th June 1177 A.D.[11]

A record dated Saka 1115, the year Pramadi, Ashadha, ba.13, Monday, Dakshinayana-sankramana corresponding to 1193 A.D., June 28, seems to register a gift for burning a perpetual lamp before god Kanvesvara of Kannambadi.[12]

A Kannada record in Sanskrit and Kannada refers to the rule of Narasimha II after his eastern campaigns and registers the gift of 30 gadyanas by the officers for the consecration of the temple of Narasimha and for the excavation of a tank. The details of date Saka 1149, Sarvajitu, Ashadha, su.11, Sunday, correspond to 27th June , 1227 A.D.[13]

A Kakatiya record from Tripurantakam in Kurnool district states that Chalukya Narayana Bhimaraja Siddayadeva gave the village of Kedurepalli on the Musi in Punginandu to god Tripurantaka-mahadeva. The details of date Saka 1179, Pingala, Ashadha, su.5, Wednesday, Karkataka-Sankranti correspond to 1257 A.D., June 27.[14]

A Kakatiya record from Zampani states that a certain Nagisetti gave a number of cows for a lamp to the temple of Ramisvara. The details of date Saka 1181, Ashadha, su.6, Friday, Dakshinayana-sankranti correspond to 1259 A.D., June 27, Friday. On this day the Dakshinayana-Samkranti began at 18 hours 15 minutes after Sunrise.[15]

Another kakatiya record from Tripurantakam in Kurnool district states that king Ganapatideva gave the villages to god Tripurantakadeva. The record is dated Saka 1182, 62nd year of Ganapatideva, Raudri, Ashadha, ba, Karkataka-sankranti correspond to 1260 A.D, June 27, Sunday. [16]

Details of grant made over to the Jaina temples on the occasion of Dakshinayana are not wanting. In a record of 14th century there is a reference to the gift of the village Hadinad along with the income from revenue to the nakhara Jinalaya of Chandraprabhasvami for worship and offerings to be made on the day of Dakshinayana.

A record from Kollegal Taluk registers a gift of a village in Hadinad and income from revenues like Siddaya sunka and pannaya to the Nakhara-jinalaya of Chandra prabhasvami for worship and offerings. The details of date refers to Bhadrapada ba, Friday, Dakshinayana-Sankramana.[17]

In the Dalavay Agraharam plates of Ativirarama Pandya, the details of date including chronogram is given. The Saka year 1517(1595 A.D.) correspond with the 33rd year after the accession of Srivallabha. On a Monday the Dvadasi tithi, of the bright half of the month Sravana (Simha), Varsha-ritu, Dakshinayana of the cyclic year Durmukhi, the grant was made on the day of Sravana nakshatra, coinciding with Subha-yoga and Subha-karana, king Abhirama alias Ativira, born on the Dhanishta nakshatra, granted at the request of Rama krishnappa Nayaka, Son of Haridasa, the village of Nadikkudi in the name of Ativirarama Puram was granted. [18]

3.2 SIMHA(LEO) - SANKRANTI:

The transit of the sun from Karkataka rasi(cancer) to Simha rasi(Leo) is called Simha sankranti. This day is the solar calender's new month and is known as singam month in Malayalam, Avani in Tamil. Bhima month in Andhra and Sravana in Karnataka. The time taken by the Sun to travel Simha rasi is called month of Avani.

A copper plate from T.Narasipura Taluk dated Saka 1319, Isvara, Sravana su.5, Sunday, Simha-sankranti corresponding to 1397 A.D., July 29 refers to the rule of Harihara II, the Vijayanagara ruler, converted the village Kolatur into 36 vrittis gifted them to 39 Vedic Scholars in the presence of god Agastyanatha.[19]

An inscription of Vijayanagara king dated Saka 1450, Sarvadhari, Sravana ba.5 correspond to 5th August, 1528 A.D. It registers the gift that was made on this occasion. But this sankranthi occurred on 31st July. [20]

3.3 KANYA (VIRGO) SANKRANTI:

The transit of the Sun from Simha rasi (Leo) to Kanya rasi is called Kanya sankranti. It marks the beginning of the sixth month in Hindu solar calendar, Purattasi month in Tamil calendar ,Kanni masam in Kerala calendar.

There is a record in the temple of Nilakantheswara, at Narayanapuram, dated Saka 1050 (= 1128 A.D.). It refers to the gift of perpetual lamp on the occasion of Kanya Sankranthi. [21]

3.4 TULA (LIBRA) SANKRANTI:

The transit of the sun from Kanya rasi to Tula rasi(Libra) is called Tula sankranti. It marks the beginning of the seventh month in Hindu solar calendar.

A copper plate record in Sanskrit and Kannada registers the gift of the shares by the king ,to the mahajanas of the village. This record contains two dates: Saka 1117, Ananda, Asvija, su.11, Wednesday and Vishu sankranti corresponding to Tuesday, 27th September, 1194 A.D. However, Tula-Sankranti occurred on the next day. [22]

3.5 VRISCHIKA (SCORPIO) SANKRANTHI:

The transit of the sun from Tula rasi to Vrischika rasi (Scorpio) is called Vrischika sankranti. It marks the begin of Tamil calendar, Dhanur masam in Kerala calendar.

A Bhogapuram record of Eastern Ganga king 31st year of Anantavarmadeva in Vizagapatnam district dated Saka 1027, Vrischika samkranti,ba.5,Thursday corresponding to 1105 A.D. registers that the gift of a piece of a wet land at Bhogapuram by Lokimani-Setti.[23]

3.6 DHANUS (SAGGITARIUS) - SANKRAMANA

This reference belongs to the reign-period of Hoysala Narasimha (III) and is dated Saka 1177, Ananda, Margasira ba.1, Thursday, **Dhanus-sankramana,** corresponding to 1254 A.D., November 26. It states that the king made an offering to god Vijaya-Parsvadeva for the prosperity of the kingdom of Somesvara. [24]

Table 3.1

Comparison of Uttarayana and Dakshinayana

Uttarayana (Northern Solstice)	**Dakshinayana (Southern Solstice)**
➢ Day is longer than night ➢ 22st December to 22rd June ➢ Sunshine and Prosperity ➢ Because of increase in heat and dryness on earth, causes loss of strength (of body) gradually. ➢ Sisira (Cold), Vasanth (spring) and Grishma (Summer) Seasons. ➢ It is considered more auspicious ➢ Grants given are more	➢ Night is longer than day ➢ 22rd June to 22st December ➢ Darkness and cold reign ➢ Because of increase in cold and soothing effects on earth, increases strength (in body) gradually. ➢ Varsha (Rainy), Sharad (Autumn) and Hemanth (Snowy) Seasons ➢ It is not as auspicious as Uttarayana ➢ Grants given are lesser than Uttarayana

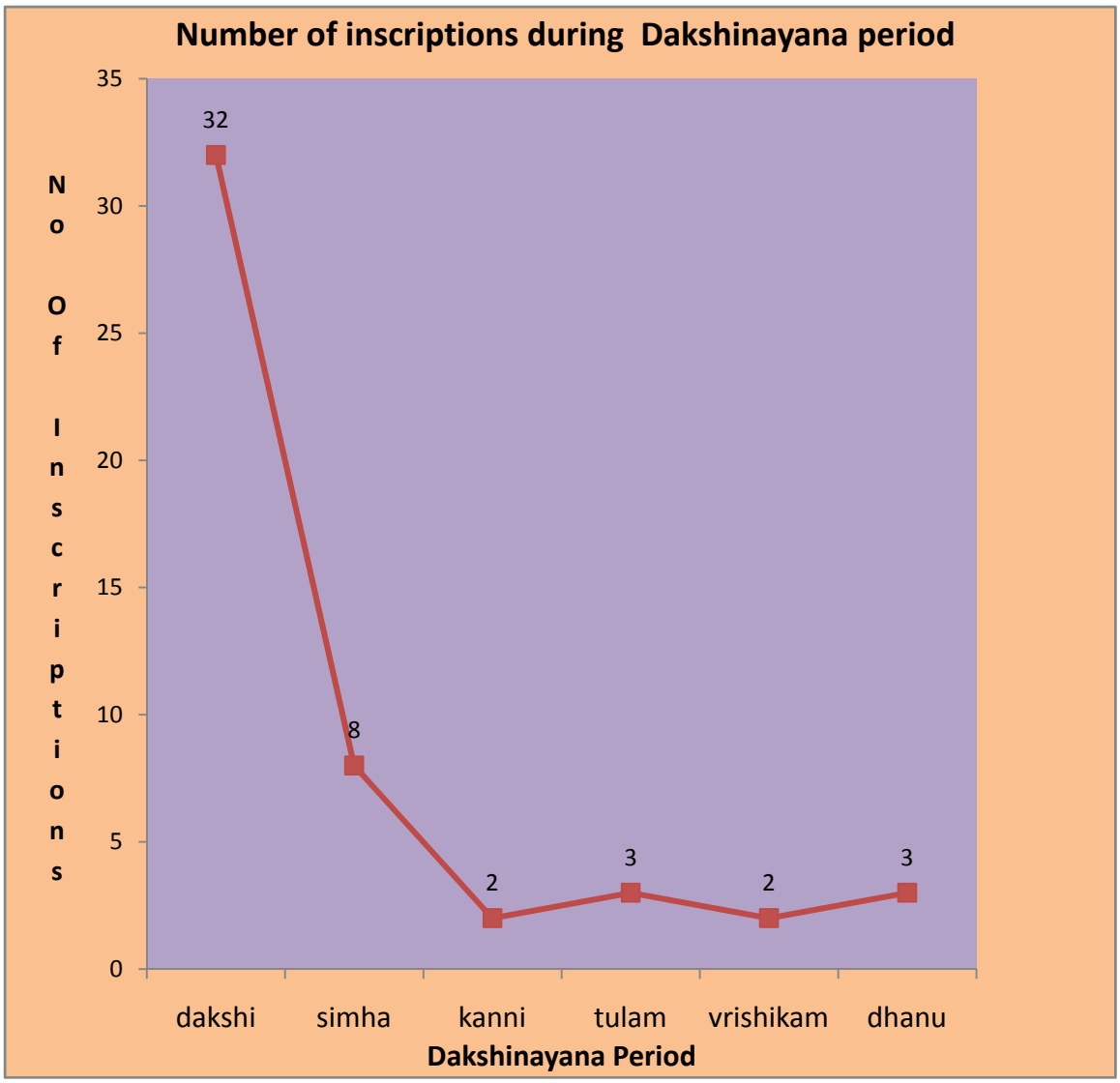
Table-3.2

Total number of inscriptions during Dakshinayana period

Occurrence	Dakshinayana Period
Dakshinayana Sankranti	32
Simha	8
Kanni	2
Tulam	3
Vrishikam	2
Dhanu	3

Graph-3.1(a)

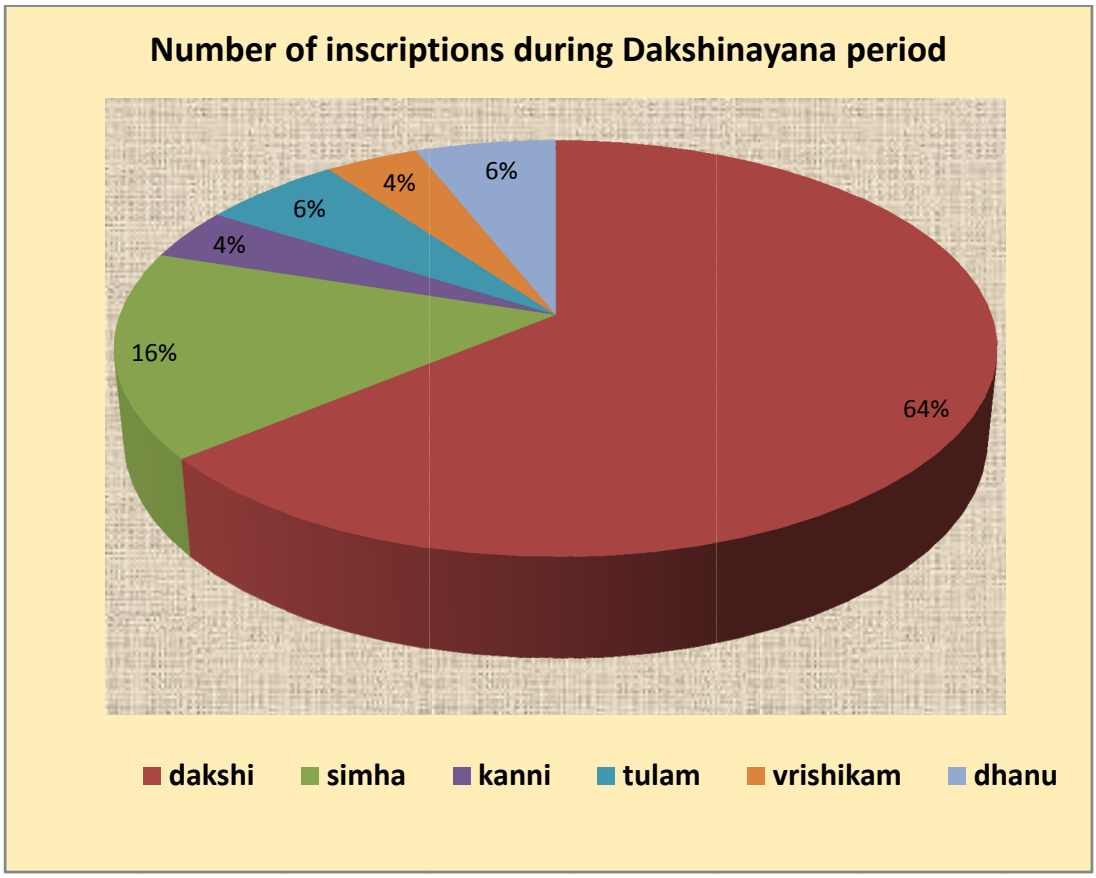
Number of inscriptions during Dakshinayana period



The number of inscriptions in Dakshinayana is more than other sankranti. The period is considered auspicious as pitra make their way to the mother earth during Dakshinayana. Various kinds of charity are also done during the period. It is considered to be an auspicious phase for Hindus as many popular festivals occur during this period.

Graph-3.1(b)

Number of inscriptions during Dakshinayana period (Pie Chart)



The pie chart exhibits, 64% of the inscriptions are witnessed Dashinayana and the least percentage i.e 4% is witnessed in Kanni and Vrishikam. Dakshinayana is more importance in south India than north India, because we have one version in Tamil as "ஆடி பட்டம் தேடி விதை" . The month Aadi is famous for putting all grain seeds in lands. In south India Vishu is the beginning of Tamil New year and Ugadi in Andhra because there is a 15 days difference in these two days. All business men start their new accounts on that day. In Dakshinayana period Tula Sankranti is more auspicious because Tula bath in very importance in south India.

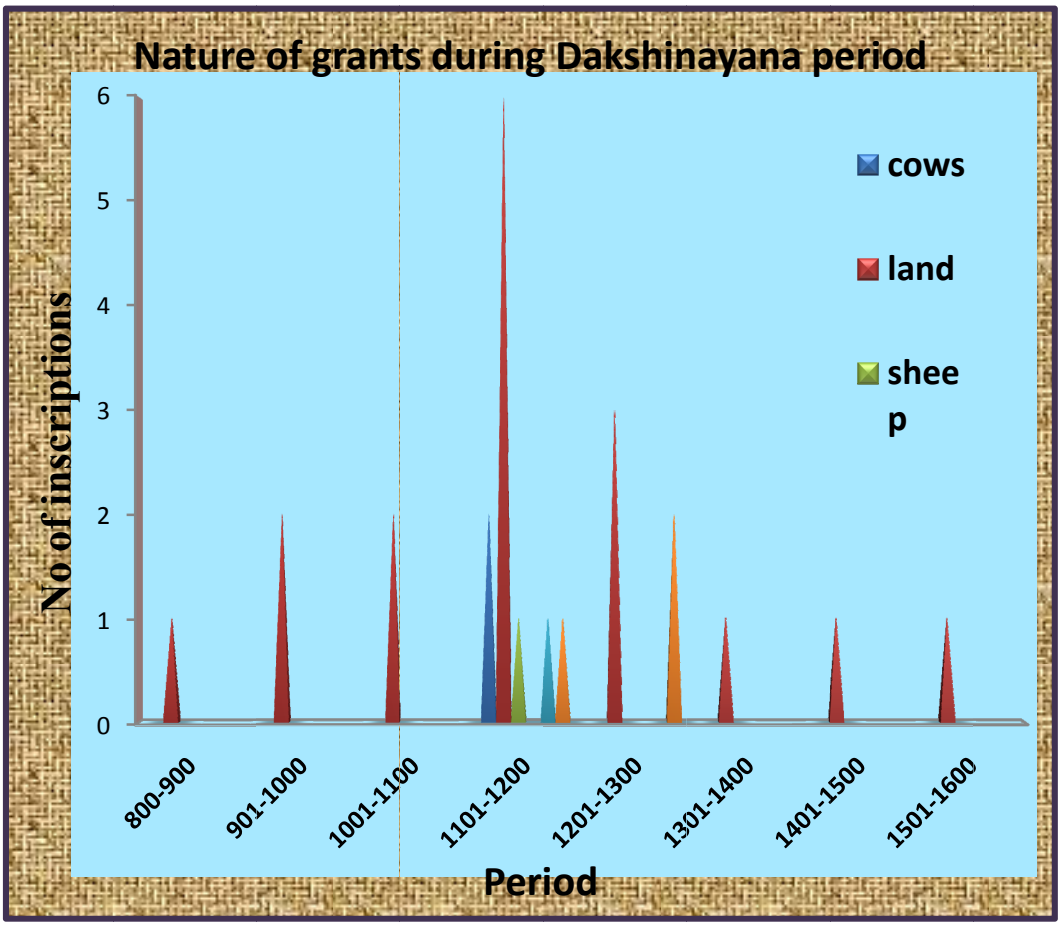
Table-3.3

The Nature of grants during Dakshinayana period

Period/purpose	The nature of grants during dakshinayana period				
	Cows	**Land**	**Sheep**	**Madas**	**Gold**
800-900	0	1	0	0	0
901-1000	0	2	0	0	0
1001-1100	0	2	0	0	0
1101-1200	2	6	1	1	1
1201-1300	0	3	0	0	2
1301-1400	0	1	0	0	0
1401-1500	0	1	0	0	0
1501-1600	0	1	0	0	0

Graph-3.2

Nature of grants during Dakshinayana period



This graph exhibits the curve denoting the nature of the grant that has been made on the occasion of Dakshinayana. Further the maximum number of inscriptions that refer to land grants is 6.This occurred in the middle of 12th century. The lowest number of inscriptions referring to land grants on the occasion of Dakshinayana is only 1.This can be witnessed during in 9^{th}, 13^{th}, 14^{th}, 15^{th} centuries.

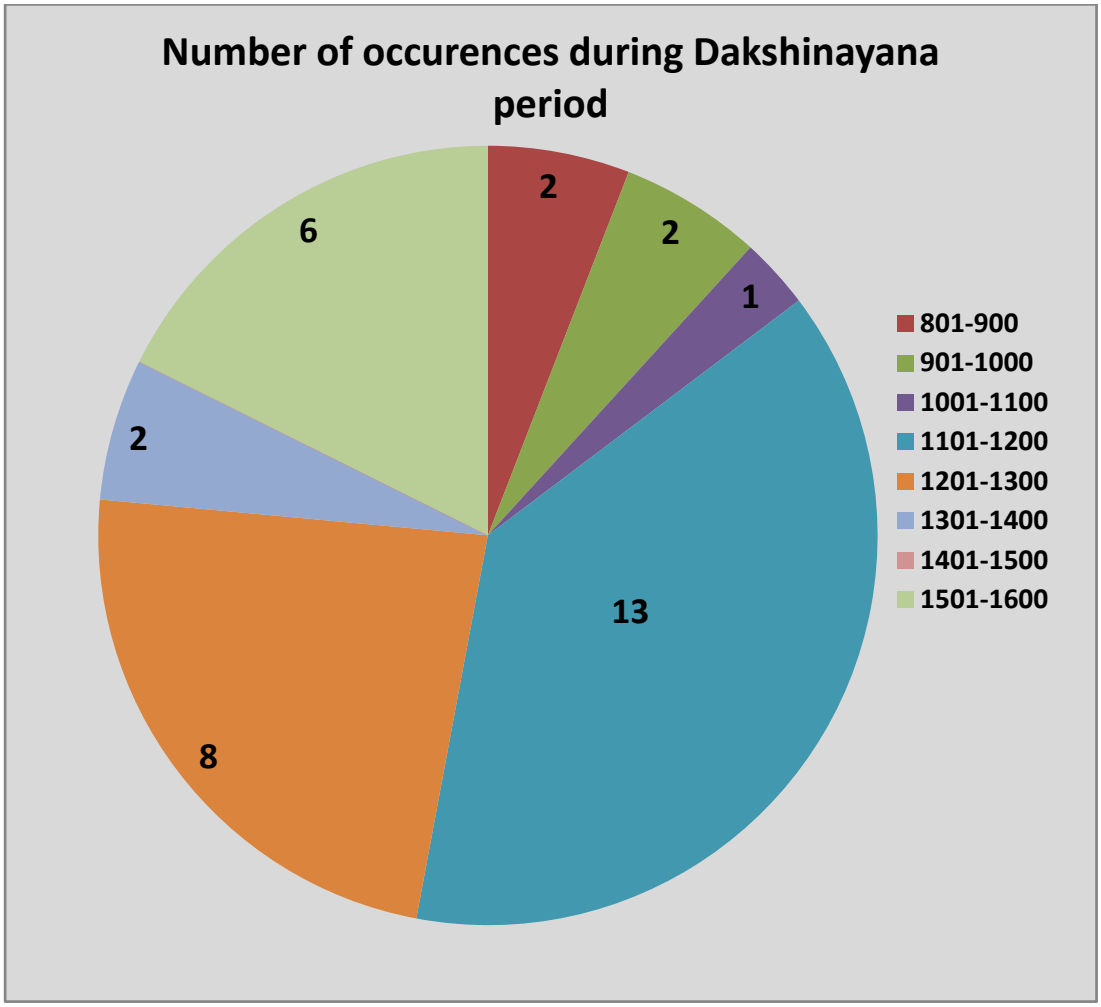
Table 3.4

Number of occurrences during Dakshinayana period

Period	Occurrences during Dakshinayana
801-900	2
901-1000	2
1001-1100	1
1101-1200	13
1201-1300	8
1301-1400	2
1401-1500	0
1501-1600	6

Graph 3.3

Number of occurrences during Dakshinayana period



This pie diagram exhibits the number of inscriptions in which Dakshinayana has been mentioned. Further the maximum number of inscriptions that refer to Dakshinayana is 13 that occurred between 1100-1200 A.D., i.e 12th century A.D. We do not come across any record during 15th century A.D.

3.6 CONCLUSION:

Dakshinayana is observed as auspicious by many people. Gifts have been made on this occasion for there is accrual of merit and welfare of the ancestors. Various types of gifts have been made on this occasion more likely as a parihara (compensation) for the benefits of the kith and kin and for the progeny.

NOTES AND REFERENCES:

[1] *SII ., Vol XXVII, No: 282*

[2] *Ibid., Vol XXII No: 341*

[3] *SII.,Vol XVII,No:314*

[4] *SII.,Vol X, No: 69*

[5] *Ep.Carn., Vol 9,No:333,p.315*

[6] *SII., Vol X No: 108*

[7] *SII., Vol X, No:145*

[8] *Ibid., Vol X No: 179*

[9] *SII., Vol X,No:188*

[10] *SII., Vol X, No:191*

[11] *Ep.Carn.,Vol 10,No:182,p.237*

[12] *Ep.Carn.,Vol 6,No:35,p.127*

[13] *Ep.Carn., Vol 8,No: 161,p.393*

[14] *SII ., Vol X,No: 355*

[15] *SII., Vol X,No:365*

[16] *SII.,Vol X, No: 371*

[17] *Ep.Carn., Vol 4,No:118,p.480*

[18] *TAS., Vol I, No: XIII*

[19] *Ep.Carn., Vol 5,No:17,p.416*

[20] *Ep.Carn., Vol 8,No:84,p.299*

[21] *SII.,Vol.XXIX, No:678*

[22] *Ep.Carn., Vol 10, No:286,p.349*

[23] *SII.,Vol X, No:655*

[24] *Ep.Carn., Vol 9,No:390,p.358*

CHAPTER - 4

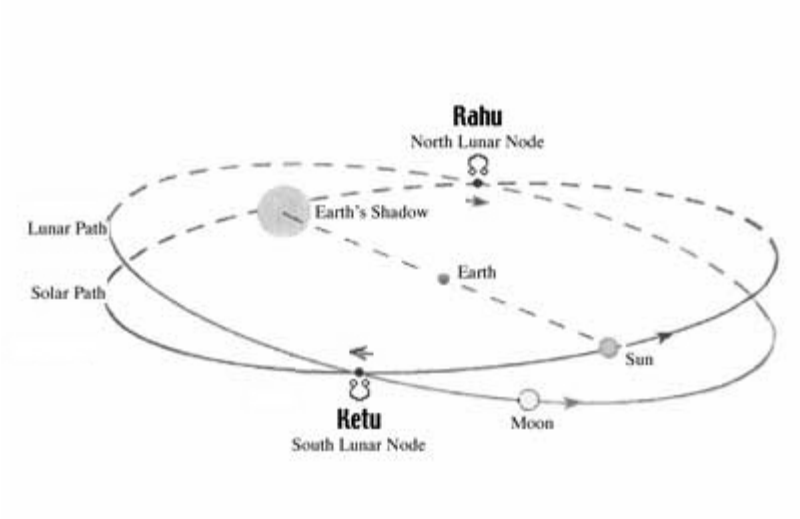
4.1 SOLAR AND LUNAR ECLIPSES:

4.1.1 ECLIPSE:

An eclipse is a wonderful phenomenon of the heavens, which attracts the attention of one and all. Each month, the moon crosses the ecliptic at two points called nodes. It crosses at one node going southward and two weeks later it crosses at the other node going northward. Eclipses can only occur when the sun is near one of the moons orbit. Our ancient people were aware of the eclipses that occur at the nodal points. The visibility of the Sun and the moon is observed at the nodal points during eclipse.

Fig 4.1

Ascending and Descending Nodes

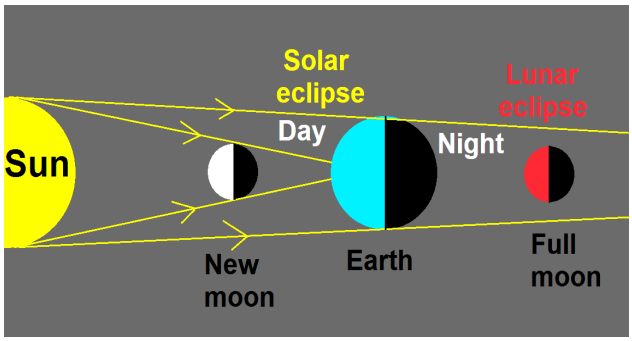


At A, the moon's path crosses from below the ecliptic and A is called Rahu or the ascending node. At B, the moon's path crosses from above the ecliptic. B is called Ketu or descending node. Rahu and Ketu are imaginary points and they are ranked with planets .This fact is indicated in the puranas by the statement that they drank ambrosia in disguise. In Hindu Astronomy, Rahu and Ketu are called the shadow planets. They have a backward motion, for determining the eclipses; they are treated as if they are real planets.

An eclipse occurs when one object gets in between you and another object and blocks your view. From Earth, we routinely experience two kinds of eclipses: an eclipse of the Moon and an eclipse of the Sun i.e., lunar eclipse and solar eclipse. In a solar eclipse, a portion of the solar disc is hidden by the Moon, whereas in a lunar eclipse the Moon enters the shadow cast by the Earth. A solar eclipse is visible only at a few places, since the Moons disc cannot hide the Sun from all observers on the surface of the Earth. A lunar eclipse is visible to all observers as the Moon enters a shadow and ceases to shine. A solar eclipse is total or annular for some observers, partial for some and is not visible for the rest. The lunar eclipse is either partial or total for all, it can never be annular. Taking the whole Earth, there are more solar eclipses than lunar eclipses. There will ordinarily be 4 eclipses in a year; but the maximum number in a year will be 7 of which 5 will be solar and 2 lunar or 4 solar and 3 lunar.

Fig 4.2

Solar Eclipse And Lunar Eclipses



These two types of eclipses can be broken down into four types. They are partial eclipse: total eclipse: annular eclipse and hybrid eclipse

Fig 4.3

Types of eclipses

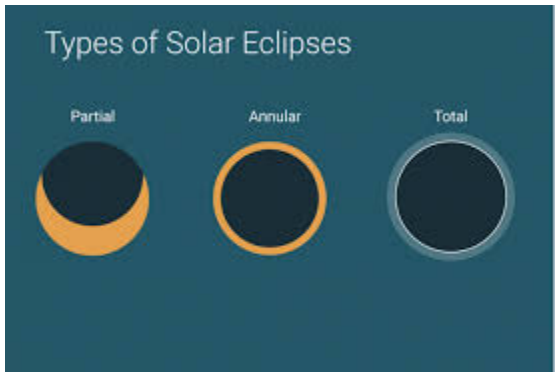
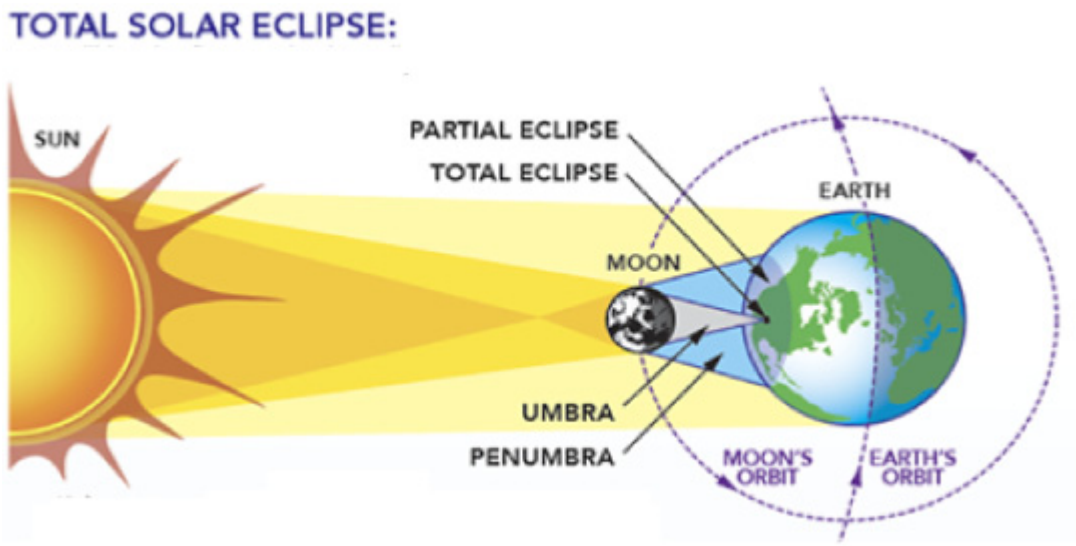


Fig 4.4

Umbra and penumbra cone



Let S and E be the centres of the Sun and the Earth. Let V be the vertex of the cone having the direct common tangents AC and BD to the Sun and the Earth as its generators. The portion of the cone from E to V is called the Umbra.

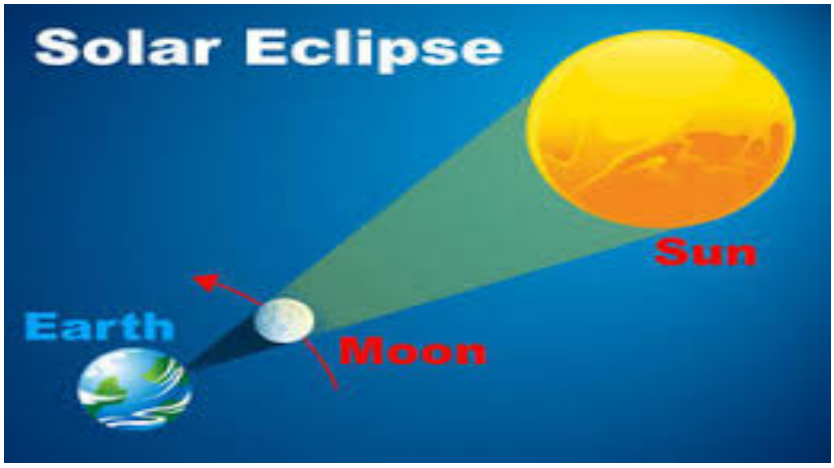
If the cone whose generators are the transverse common tangents to the Sun and the Earth, the portion of this cone which lies outside the Umbra is called the Penumbra.

4.1.2. SOLAR ECLIPSE:

A solar eclipse occurs in the day time at new moon, when the moon is between the Earth and the sun.

Fig 4.5

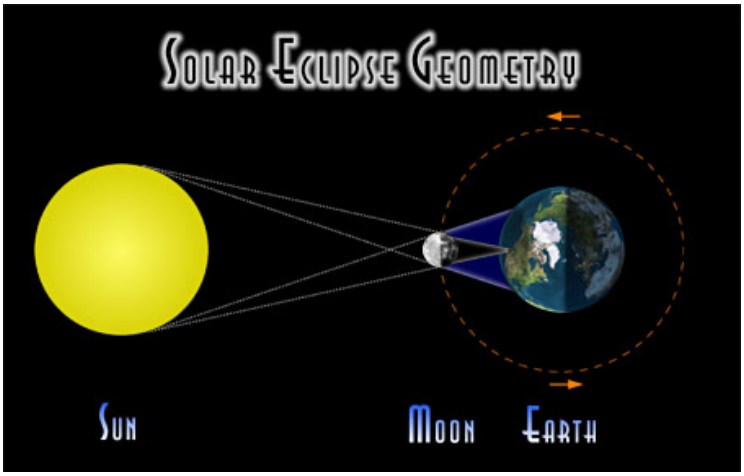
Solar Eclipse



Solar eclipse occurs when the moon travels between the sun and the earth blocking the sun's light from the earth in the middle of the day and generally giving the appearance of a ring of light in the darkening sky.

Fig 4.6

Solar Eclipse Geometry



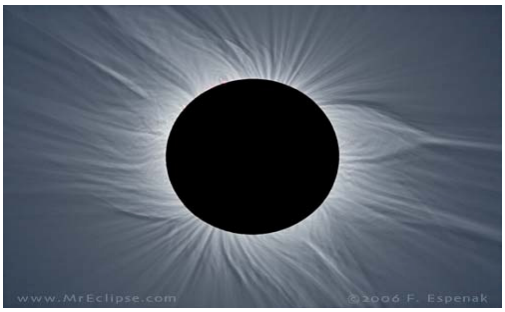
4.1.3. TYPES OF SOLAR ECLIPSES:

There are 3 general classes of Solar eclipses viz.,

1) **Total Solar eclipse**: When the umbra of the moon's shadow touches a region on the surface of the earth.

Fig 4.7

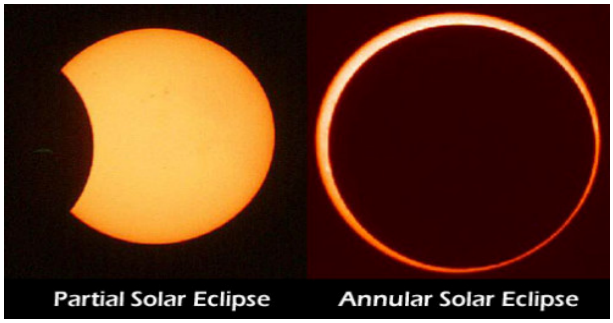
Total Solar Eclipse



2) **Partial Solar eclipse**: When the penumbra of the moon's shadow passes over a region on the earth's surface.

Fig 4.8

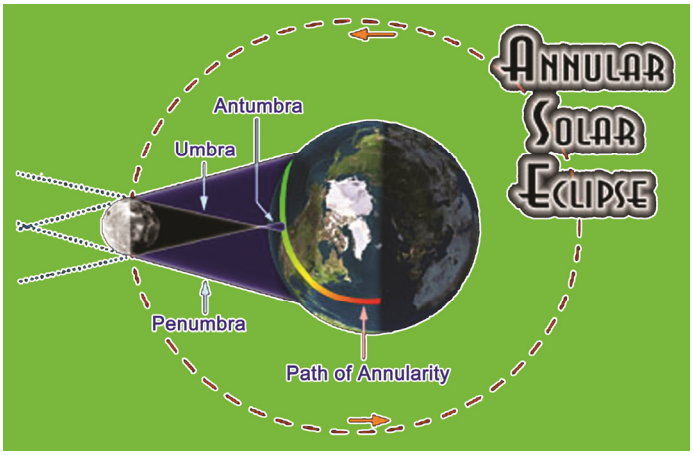
Partial and Annular Solar Eclipse



3) **Annular Solar eclipse**: This occurs when a region on the earth's surface is in line with the umbra but the distances are such that the tip of the umbra does not reach the earth's surface. In a total eclipse, the surface of the sun is completely blocked by the moon, in a partial eclipse it is only partially blocked, and in an annular eclipse the eclipse is partial, but such that the apparent diameter of the moon can be seen completely against the (larger) apparent diameter of the sun.

Fig 4.9

Annular Solar Eclipse

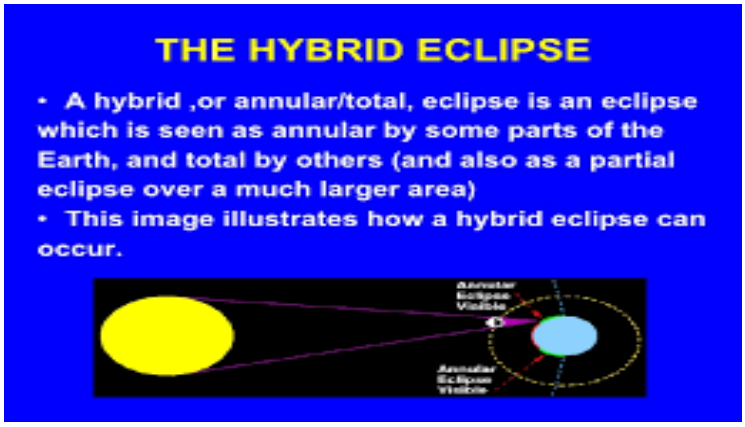


4) Hybrid solar eclipse:

A hybrid eclipse (also called annular/total eclipse) shifts between a total and annular eclipse. At certain points on the surface of Earth, it appears as a total eclipse, whereas at other points it appears as annular. Hybrid eclipses are comparatively rare.

Fig 4.10

The Hybrid eclipse



4.1.4 IMPACT OF ECLIPSES:

The Southern rulers of coastal and interior areas have attached greater importance to astronomical occurrences like eclipses. It is to be noted that auspicious and religious functions were observed on these days. Not only they gave the grants to mark such events but also endowed the *pariharas* in several ways so as to ward off the evil effects. The grants were made on these occasions by the rulers to the temples and mathas. Special attention has been paid in observing these occasions especially in the temples.

4.2 INSTANCES OF SOLAR ECLIPSE

A few instances of astronomical occurrence that are experienced may be cited here.

The Sataluru plates of an Eastern Chalukya ruler Gunaga Vijayaditya III during 9th century A.D. made a grant of the village Santagrama to hundred Vedic Scholars on the occasion of solar eclipse.[1]

On paleographical grounds and from the mention of the generation of the Kadamba family the record may be assigned to 5-6th century A.D. From the available records it is learnt that this is one of the earliest references to the occurrence of Surya grahana(solar eclipse) which is interestingly quoted by the expression (Rahu-Kolum-Pani-grahana).In this connection it is relevant to quote an undated inscription of early Kadamba king Konguni Mahadhiraja identical with Durvinita from Asandi in Kadur district of Karnataka refers to the grant of the village Peru in Marugare-vishaya for the chaityalaya in the month of Phalguna on the day of an eclipse. The day of the eclipse is referred to as (Rahu-Kolum-Pani-Grahane). The term Pani-grahane suggests the marriage of the bridegroom with bride indirectly indicating Surya grahana (solar eclipse).[2]

A Chola record in Tiruchchatturai in Tanjore district belonging to king Madiraikonda Parakesarivarman Parantaka-I dated during 907-953 A.D. registers a gift of 30 pon for a lamp by the Chola queen Tribhuvanamahadeviyar dated on the day of Solar eclipse.[3]

According to Katlaparu grant village Katlaparu in Vengi Sahasra vishaya was granted by king Vijayaditya III to his Vedic Scholars general Rajaditya. The grant was given on the occasion of a solar eclipse.[4]

The Pallivada grant states that on the day of solar eclipse dated Saka 581(=659A.D.) king Vishnuvardhana made a grant of the village Arutankur in Gudrahara-vishaya to Dhruvasarma who is a Vedic Scholar , a resident of Asanapura. The Vedic Scholars were honored on auspicious occasions like solar eclipse.[5]

A record of the king Skandavarma of Punnad, assignable to the 7th -8th century A.D., states that he granted a village Mutta laviyur in Edettore-nadu to a Vedic Scholar Kottamasarma of Arida-gotra, well versed in astrology, omens etc., on the occasion of a solar eclipse.[6]

The Basavatti inscription of Sripurusha dated Saka 721-22 (799-800 A.D.) states that solar eclipse occurred in the month of Pausha on which date the king made grant of villages.[7]

A record of Ganga king Sripurusha dated in the 8th century A.D. refers to the grant of income from lands on the occasion of solar eclipse.

A copper plate inscription from Kudalur belonging to the reign period of Ganga king Harivarma refers to the solar eclipse which occurred in 9th century A.D.in the month of Magha coinciding with Svathi star and new moon day. The king is stated to have granted a village to the various scholars.[8]

From the Perjjarangi grant of Rachamalla I it is learnt that in Saka 741 (819 A.D.,) the Solar eclipse occurred and the king granted the village to the Vedic Scholars. In Saka 741 the Solar eclipse occurred only in the month Ashadha, corresponding to Sunday, 26th June.[9]

In a set of copper plate grant from Nanjangud it is stated that king Rajamalla II crowned his son Ereyanga the ruler in the Saka year 826, Marga-sira, Paurnami, Sunday, and the eclipse correspond to 904 A.D., November 25, Sunday.[10]

In a record of the Chola king Parantaka I (907-953 A.D.)we come to know that the king had made grants on the occasion of solar eclipse. A record of Kuttalam in Tirunelveli district dated 907 A.D. mentions the gift of land made for burning of perpetual lamp in the temple of Tirukkurralam in Tenvari-nadu by Kandan Iravi on the day of Solar eclipse.[11]

In an Ganga inscription from Paduguru dated Saka 907 (985 A.D.) on Saturday, the new moon day of Magha, the year Parthiva, an eclipse occurred.[12]

A record of Uttama Chola from Tituchchatturai in Tanjavur district belonging to 10th century A.D. mentions the gift of 96 sheep for burning of perpetual lamp to the temple by Chedi-Mahadeviyar on the day of Solar eclipse.[13]

In a record from Belachalavadi belonging to Nitimarga-Permadi dated Saka 935 and regnal year 37, Uttarayana Sankranti (1013 A.D) it is stated that the village Naranagala was granted to one Melar-odeya on Sunday, the Uttarayana-sankranti coinciding with Solar eclipse. The eclipse refer to us Suryoparaga kala. Perhaps the grants have been made on the meretorious occasion called Uparagha-Punya-kala.[14]

In the 33rd year of Rajadhiraja I dated Saka 971(=1049 A.D.,) the temple of Chandrasekharadeva received the grant of 100 bhatta of land and cows for burning a perpetual lamp on the occasion of solar eclipse. But the Solar eclipse occurred in the year 970, Sarvadhari, Magha, Amavasya which details correspond to 1049 A.D., February 5.[15]

Another inscription dated Saka 976 = 1054 A.D., belonging to the reign of Chalukya Trailokyamalladeva (Somesvara I) records a grant made to the temples on the occasion of solar eclipse for lamps, offerings, etc., by Dasimayya..

In a record from Siddhesvaram in Kurnool district belonging to the reign period of Somesvara I, it is mentioned about the gift made over to an ascetic in Saka 983, Plava, Jyestha, amavasya, Wednesday, solar eclipse corresponding to 1061 A.D., June 20th .[16]

According to a record of Kadamba king it is learnt that the income from Siddaya was made over for offerings and for burning perpetual lamp before the god

Raviyamesvara of Kittur in Saka 1001 Siddharthi, Margasira-amavasya, Sankranti, Solar eclipse. The details are irregular. There was no Solar eclipse on November 26,in 1079 A.D. [17]

A record from Krishnarajanagara Taluk dated Saka 1009, Prabhava, Sravana, Monday, Solar eclipse, Uttara-nakshatra corresponding to 1087 A.D., August 1 there is a reference to the construction of the temple by Tribhuvanakattaradeva and grant of land.[18]

A record of Hoysala Vinayaditya from Koppa Taluk in Hassan district mentions the gift of lands on the occasion of solar eclipse to Kalesvara- pandita of Gottagadi. This record mentions the Saka date 1015= 1093 A.D when the gift was made.[19]

Inscription belonging to Kalyana Chalukya ruler quote the grant made on the occasion of Solar eclipse. A record dated Chalukya-Vikrama year 32, corresponding to 1107 A.D., mentions the day of Solar eclipse when the grant was made.

A record from Rachanapalle in Anantapur district dated in the 47th year of Tribhuvanamalla (Vikramaditya VI) mentions the grant from the taxes to god Mallikarjuna of Kudiyape-stala for burning a perpetual lamp. The details of the date Saka 1034, Nandana, Chaitra-amavasye, Sunday, Solar eclipse, corresponding to 1112 A.D., do not tally.[20]

The record from Tangedumalli states that on the day of Solar eclipse in Saka 1037(= 1115 A.D.,) Mara, son of Isvara-nayaka minister of the Choda chief Kannaradeva got the tanks excavated and the image of Somisvara established in the village of Koppa (ram) in Kammanandu .There was no Solar eclipse in Chaitra, in the year Jaya.[21]

A record belonging to the king Hoysala Vishnuvardhana gives the details of date viz., Saka 1063, Durmati, Asvayuja, amavasye, Monday, Solar-eclipse, Sankramana. These details correspond to Wednesday, 1st October, 1141 A.D. But the said eclipse occurred on Tuesday, September 2.[22]

Another inscription from Somanahalli refers to the rule of Hoysaladeva and registers a grant of certain lands to god Brahmesvara for the worship and offerings by Savanta Mayideva-nayaka of Somanahalli. The details of the date are Saka 1063 corresponding to 1141 A.D., December 25, Durmati, Uttarayana-Sankramana, Sunday, Amavasya, Solar eclipse.[23]

In the record of Chola king from Rajahmundry dated Saka 1071(= 1148 A.D.,) it is mentioned that on the day of solar eclipse Somana son of Datyana-Peggada gifted a perpetual lamp to god Virabhadresvara. In the year Sukla, there was no Solar eclipse. In the year Vibhava, there was a eclipse which occurred in the month of Chaitra equivalent to 1148 A.D., April 20, Tuesday.[24]

An Eastern Ganga record from Narayanapuram mentions that on the day of solar eclipse in the Saka year 1073, Kumbha, Amavasya, corresponding to 1152 A.D., February 7, Thursday , a gift of wet land was made for the upkeep of a perpetual lamp in the temple of Nilisvara at Navapalli.[25]

A record from Kadur Taluk, Hassan district belonging to Narasimha I states that in Saka 1089 (=1167 A.D,) lands have been made over to god on the occasion of solar eclipse not only for the worship and offerings but also for the renovation of the temple.

A record that speaks of one Nakiraja states that he caused a tank, and a temple to be built on the date viz., Saka 1096, Jaya, Vaisaka, ba.15, Monday, Solar eclipse corresponding to 2nd may, 1174 A.D.[26]

In a record belonging to the king Viraballala dated Saka 1110 (=1188 A.D.,) the grant of lands and income from oil mill was made for maintaining the perpetual lamp in the temple of Mulasthana Gangesvara of Hemmanahalli on the occasion of Solar eclipse and on the day of New moon day. [27]

In the temple of Muktisvara, in the village Muktiyala dated Saka 1121= 1199 A.D., the chief Tyagi Pota is stated to have granted the village of Mukthigrama on the day of Solar eclipse. The only eclipse in Saka 1121 occurred was in the month of Magha when the details correspond to 1199 A.D., January 28th, Thursday.[28]

A record in Sanskrit and Kannada language belonging to the period of Hoysala Viraballala deva(II) states that one Avatarabhattayya – nayaka got the god Lakshimi Narayana consecrated at Heragu and granted for its worship. The grant was made in Saka 1139, Isvara, Sravana-amavasye, Friday, solar eclipse corresponding regularly to 4th August 1217 A.D.[29]

A Kakatiya record from Motupalli states that on the day of Solar eclipse Siddayadeva-maharaja gave away the village of Aduru to the temple of Ganapatiprasanna Kesavadeva at Mottupalli for the merit of Kakatiya Ganapatideva. The details of the date of the record are Saka 1153(=1231 A.D.), Khara, Jyeshtha, ba.15, Thurday, solar eclipse.[30]

A record of Hoysala Somesvara during the year Paridhavi, Phalguna, ba.15, Sunday, solar eclipse corresponding to Saturday, 1st march, 1253 A.D. mentions the grants of money and land at the time of the consecration of the god for maintaining the perpetual lamp.[31] An inscription in Nagari script and Sanskrit and Kannada languages from Holenarasipura Taluk, Hassan District on the bank of the Kaveri in the presence of god Ranganatha refers to the rule of Hoysala Somesvara and dated Saka 1165, Subhakrit, Dvitiya Bhadrapada, amavasya, Sunday, solar eclipse corresponding to 1242 A.D., September 26. It registers a royal gift of the village Aneya Kannambadi, renamed Kambapura, refers to the assignment of vrittis to the Vedic Scholars of several gotras one each for the Khandikas of Rig, Yajur and Sama Vedas, one as bhatta -vritti, one for Panchikesvara, 5 Vrittis for god Chennakesava and Devesvara and so on. [32]

A Nandaluru record dated Saka 1172, Saumya, Rishabha, ba.15, Friday, Rohini correspond to 1249 A.D, May 14. It records a gift of all the tolls at Nirandanur for the expenses of the several festivals in the temple of Sokkapperumal on this day of Solar eclipse.[33]

A record of Rajendra Billakongalva from his capital at Molate dated Saka 1175, [Sri] mukha, ardhodaya-grahana. In the given year a solar eclipse occurred on Monday, 22nd April 1253 A.D. The grant was given to the temple of Amritesvara.

A Kakatiya record from Vedadri is dated Saka 1189, Prabhava, Jyeshtha, ba.15, Solar eclipse, corresponding to 1267A.D, May 25, Wednesday states that Tyagi Manma Ganapatideveraja gave the village of Vemupalli to god Pratapanarasimha.[34]

A Tripurantakam record of Kakatiya rulers states that a certain Narepa gave 13 cows and a bullock for a perpetual lamp in the temple of Tripurantakadeva.The details of the date Saka 1189, Prabhava, Jyeshtha, ba.15, Wednesday, Solar eclipse corresponding to 1267 A.D., May 25,Wednesday.[35]

The Malkapuram record of the Kakatiya period quotes that on the day of solar eclipse which along with other details Saka 1204, Chitrabhanu, Sravana, correspond to 1282 A.D., August 5,Wednesday, Mahadeva –Bhattopadhyaya, gave 50 sheep for a perpetual lamp to the temple of Visvesvara.[36]

The Tripurantakam inscription mentions the Saka date 1212, Vikriti, Bhadrapada, ba.15, Tuesday, Solar eclipse corresponding to 1290 A.D., September 5. When the Solar eclipse was visible in India. It states that Gandapendara Ambadeva-Maharaja confirmed the grant of all the villages and Kanukas previously granted to the temple of Tripurantakesvara and made the villages, tax-free on the day of Solar eclipse.[37]

On Saka 1215, Nandana, Pushya ba.30; Thursday corresponding to Friday, 9th January, 1293 A.D., an Solar eclipse occurred on that day. It states that lands were granted to god Amritakesavapura on the day of solar eclipse for the food offerings by a chief.[38]

A record of the Kakatiya king refers to the gift of lands to the Vedic Scholars on the occasion of surya grahana in the Saka year 1248 (mistake for 1244).

A record refers to the rule of Hoysala Viraballala III when Keteya-dannayaka from Terakanambe,made a gift of the village Ketammahalli in Hullanahalliya-nadu to god Allalanatha of Hullanahalli in the Saka year 1254, Angirasa, Prathama-Chaitra, ba.30, Monday, Purvabhadra pada-nakshatra, Solar eclipse.The details are irregular.[39]

A record from Kaduru in Udipi Taluk of South Kanara district registers a gift of land to Krishna-mandacha for feeding one Vedic Scholars daily in memory of

Narisimga-bimnani. The details of date viz., Saka 1293, Virodhikrit, Asvayuja, ba.30, Solar eclipse correspond to 1371 A.D., October 9.[40]

A record from Nilavara in Udipi taluk, of South Kanara district is dated Saka 1322, Vikrama, Chaitra ba.30, Friday, Solar eclipse corresponding to 1400 A.D., March 26.It records the renovation of the temple of Durggadevi and registers a gift of specified quantities of rice for the daily worship and offerings to the goddess for the merit of Mahapradhana Irugappa -dannayaka.[41]

A record from Kolanalur in Nagari characters is dated Saka 1326, Tarana, Jyeshtha ba.30, Thursday, Solar eclipse. These details donot agree. The Solar eclipse occurred in the month of Pushya of the year, on Thursday, January 1, 1405 A.D., which might be the intended date. It refers to Vijayanagara king Harihararaya and registers the grant of the village vulenahalli to god Mallikarjuna.[42]

The Sanskrit and Kannada record in Nagari script, engraved on a set of five copper-plates, belongs to the reign period of Devaraya-maharaya of Vijayanagara gives two dates viz., Saka 1330, Sarvadhari, Prahana, Vaisakha ba.15, Thursday, Krittika, Solar eclipse regularly corresponding to 1408 A.D., April 26 and the year Virodhi, Margasira su.7, corresponding to 14th November, 1409 A.D. It states that the king granted the village Basur, to god Virupaksha at Pampa-kshetra and brahmanda.[43]

A set of three copper-plates in Nagari script and Sanskrit language registers a gift of the villages Kelagundari in Gova-rajya by Devaraya(II), the Vijayanagara king to the ascetic Purushottanaranya as sarvamanya in order to maintain the worship of Mahabala and for the upkeep of the matha and feeding for the Vedic Scholars on the occasion of the Solar eclipse. This record is from Uppavalli village, Chikkamagaluru Taluk, Chikkamagaluru district. The details of date are Saka 1353(reckoned by the chronogram lakshmiloka) Virodhikrit, Magha, ba.15, Solar eclipse, Saturday, Dhanishta-nakshatra corresponding to 2nd February, 1432 A.D.[44]

A record from Macherla dated Saka 1450 registers the grant of land on the occasion of surya-grahana (solar eclipse) for the merit of one's parents. The details of date Saka 1450, Sarvadhari, Karttika, ba.30, Thursday, correspond to 1528 A.D., November 12.Solar eclipse.[45]

A fragmentary Sanskrit inscription from Malavalli Taluk states that while Achyutaraya, son of Narasa of Vijayanagara was ruling from Vidyanagara, made a grant of the village Koregala to Nanjinatha. It refers to the month Madhava, and Solar eclipse. The details are insufficient for verification. During the reign-period of Achyutaraya, no solar eclipse occurred in the month of Vaisakha with which the month Madhava is generally identified. But twice during the month of Chaitra did the eclipse occur, i.e., on March 29, 1530 A.D., and April 7, 1540 A.D. But once, on May 18, 1528 A.D., the said eclipse occurred. But on this date Krishnadevaraya was still ruling.[46]

It is interesting to know from a record from Handadi from South Kanara district dated Saka 1465, Subhakrit, Bhadrapada su.1, Friday, Solar eclipse corresponding to 1542 A.D., August 15, there is a reference to the gift of land for worship and offerings to the matha attached to the temple of Gopinatha built at Handadi. [47]

A record of Vijayanagara king Sadasivaraya-maharaya refers to grant of the village Tumbala in Srirangapattana division to god Adigunja Narasimha, Agastyesvaradeva and Kesavaradeva for the merit of his father by Venkatadri. The details of the date 1478, Karttika, ba.30, Monday, Solar eclipse, and do not furnish cyclic year. The cyclic year should be Nala, which along with other details would correspond to 1556 A.D., November 2. [48]

4.3. LUNAR ECLIPSE

During a lunar eclipse, the moon moves into the shadow of the earth during night time hours, gradually blocking the moon from the earth. On earth, there can be anywhere from 4-7 eclipses of varying degrees within any given year. There are actually three types of lunar eclipses. They are total, partial and penumbral.

A lunar eclipse occurs when the Moon passes directly behind the Earth into its umbra (shadow). This can occur only when the sun, Earth and moon are aligned exactly, with the Earth in the middle. Hence, a lunar eclipse can occur only the night

of a full moon. The type and length of an eclipse depend upon the Moon's location relative to its orbital nodes.

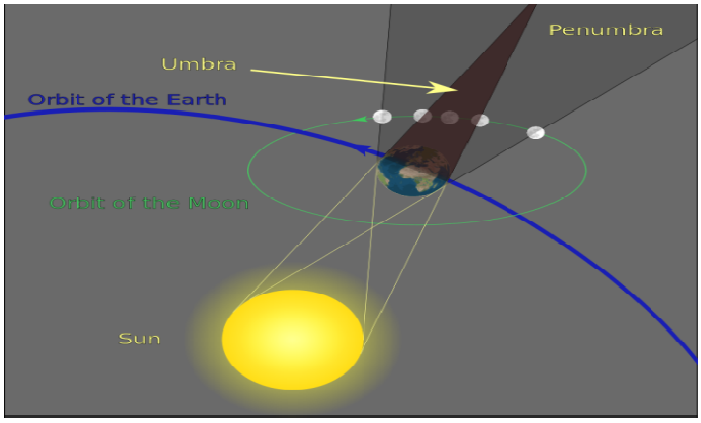
Unlike a solar eclipse, which can be viewed only from a certain relatively small area of the world, a lunar eclipse may be viewed from anywhere on the night side of the Earth. A lunar eclipse lasts for a few hours, whereas a total solar eclipse lasts for only a few minutes at any given place, due to the smaller size of the Moon's shadow. Also unlike solar eclipses, lunar eclipses are safe to view without any eye protection or special precautions, as they are dimmer than the full moon.

4.3.1. TOTAL LUNAR ECLIPSE:

This takes place when the earth passes directly in front of a full moon, thus casting its shadow on the moon’s surface. A total lunar eclipse has the direct sunlight completely blocked by the earth's shadow. The only light seen is refracted through the earth's shadow. There are two parts of earth’s shadow, the penumbra and the umbra. The penumbra is the outer part of the shadow where the sunlight is not completely blocked. The penumbral shadow only dims the moon, you may not notice this part of the eclipse at all. The umbra is the actual shadow created by the earth within the central umbra shadow, the moon is totally shielded from direct illumination by the Sun. In contrast, within the penumbra shadow, only a portion of Sunlight is blocked.

Fig. 4.11

Schematic diagram of the shadow cast by the Earth.



You will notice the moon getting darker from the left side first. During the time the entire moon is in the umbra, it is said to be in totality. When the moon is in totality, the whole sky gets darker. Before the moon started getting darker you could probably see a few of the brightest stars in the sky but during the totality, you will see many more stars when they are not obscured by the moon's light.

4.3.2 PARTIAL LUNAR ECLIPSE:

A partial lunar eclipse is when only part of the moon travels through the umbral shadow of the earth. Depending on how much of the moon passes through you may or may not notice this type of eclipse.

4.3.3 PENUMBRAL ECLIPSE:

A penumbral eclipse is when the moon passes only through the penumbral shadow of the earth. During the penumbral eclipse you would likely not notice any darkening of the moon unless you were in very dark skies and were looking for it.

4.3.4. OCCURRENCE OF LUNAR ECLIPSE EVERY MONTH:

On the night of May 15 or 16, we will be able to see a total lunar eclipse. We have a full moon every month that we should also therefore have a lunar eclipse every month but not so. Because the orbit of the moon is tilted by about 5.2" with respect to the earth's orbit, so that usually the moon passes slightly above or below the line between the sun and the earth. Thus at most full moons the shadows miss their mark and no eclipse occurs. Only about every six months during an eclipse season are the conditions right for the lunar eclipse.

4.3.5. EPIGRAPHS REFERRING TO LUNAR ECLIPSE

From among the epigraphs referring to lunar eclipse a few may be examined.

In the second half of the 7th century there is a reference to the occurrence of lunar eclipse thrice within that period. The Visakhapatnam charter belongs to the reign period of Eastern Chalukya Jayasimhavallabha I and dated in his 18th year. King Jayasimha is stated to have made a gift on the day of a lunar-eclipse and the 15th day of the 8th fortnight of Hemanta in the above regnal year.

The Pulimburu grant also furnishes the season, the day, etc., the eclipse must have occurred on the 15th day of the bright fortnight of Purnima-tithi, evidently Phalguna, the last month of the said year. The 18th year of Jayasimha either current or expired, when counted from any one of the three following years has a lunar-eclipse on Phalguna,su 15. The lunar eclipses in Phalguna-Purnima in Saka 579 (657 A.D.); Saka 580 (658 A.D.) and Saka598 (676 A.D.) falls within the period from 650 to 680 A.D. The last date is too late for Jayasimha's reign period. Hence, either 657 A.D. or 658 A.D. seem to correspond with the 18th year of Jayasimhavallabha I. This enables us to count his reign period from Saka 563 (641 A.D.).The date of the grant under discussion is 659 A.D. February 12, when there was a lunar-eclipse. This copper plate grant was given on the day of Palguna Purnima coinciding with lunar eclipse.[49]

In order to fix the exact date of the grant it may be necessary to review the cycle of periodicity of repetition of the eclipses particularly the well known cycles namely Saros and metonic cycles. According to the Saros cycles the interval between two successive periods for the Sun and through the moon's node (Rahu) is about 346.62 days and 19 such intervals amounts to 6585.78 days. The mean length of synodic month is about 29.5306 days and therefore 223 lunation are equivalent to 6585.32 days. This period is called Saros and it is equivalent to 18 years 11 days and 8 hours. Eclipses of the same type are generally repeated once in a Saros period (i.e) 18 years 11 days and 8 hours. Similar to Saros there is another period called metonic cycles with period of about 19 years .We noticed that 239 lunations are equivalent to 19 years.

Viewing against this background it may be suggested that the first date while the lunar eclipses in the month of Phalguna in Saka 579, the astronomers might have predicted the occurrence. So also the case of second date the Saka 580 with respect to the third date Saka 598 the astronomers who lived in the Eastern Chalukya period predicted the day on which the lunar eclipse occurred. Besides three dates the Saka date 581 has been suggested by the editor of the inscription and tallies it with February 12, 659 A.D., when there was a lunar eclipse. So it may be inferred from this discussion that the astronomers had the knowledge of predicting the eclipses using a cycle similar to Saros cycle. Hence the Saros cycle will be very useful for predicting the eclipses.

Year	Date	Saros cycle
641 A.D.,	February 01	92
659 A.D.,	February 12	92
679 A.D.,	February 23	92
658 A.D.,	February 23	82
659 A.D.,	February 13	92

In the Sakharambu grant belonging to the reign period of Eastern Chalukya king Vijayaditya-maharaja is recorded the grant of the village Sakharambu in Velanadu–vishaya to a resident of Karambichedu named Devasarma of Harita-gotra, on the occasion of lunar eclipse in Uttarayana. The date of the grant is 763 A.D.[50]

The Musipatnam plates issued by Vijayaditya (Gunaga Vijayaditya III) ,son of Vishnuvardhana who was the son of Vijayaditya II, Narendramrigaraja, also called

Chalukya-Arjuna refers to the defeat of an enemy named king Mangi, and records the grant of the village Tandaparu in the Gudravara-vishaya to a Vedic Scholars named Vinayadisarman on the occasion of lunar-eclipse. [51]

The Kottimba grant of Yuvaraja Marasimha is dated in Saka 721(799 A.D.). It refers to the grant of the village named Kottimba on the occasion of lunar eclipse which occurred on the full moon day, on Monday in the month of Sravana .[52]

A copper plate grant of Narendra-mrigaraja alias Vijayaditya II, son of Vishnuvardhana IV is stated to have granted the village Korraparru to 24 Vedic Scholars on the occasion of lunar eclipse (Chandra-grahana-nimitte)[53]

The Chendalur plates belonging to Sarvalokasraya alias Vijayasiddhi records the royal grant of lands in the village Chendarura in Kamma-rashtra to six Vedic Scholars who were well-versed in Chhandogas (i.e., students of the Samaveda), each of whom received two shares of it. There is a reference to the eclipse on the full-moon tithi of Vaisakha in the second year of Sarvalokasraya.[54]

The Godavari plates of Vishnuvardhana V assignable to 9th century A.D., furnises the names of three rulers viz., Vishnuvardhana his son Vijayaditya and whose son Vishnuvardhana and records the royal grant of land, twelve khandikas in extent, in the village Permmanchili (Penumanchili) to a Vedic Scholars Agnisarmma, son of Sankidisarmma and grandson of a resident of the village Padegu, on the occasion of a lunar-eclipse.[55]

The Gattavadi copper plates of Nitimarga-Ereganga refers to the occurrence of lunar eclipse in the Saka year 826 (904 A.D.), Monday, the 15th day of bright half of Margasira, the king made the grant of the village to the Vedic Scholars.[56]

An inscription from Nirpalani of Rajakesarivarman (Gandaraditya) dated 955 A.D .refers to the gift made on the occasion of the lunar eclipse on the day of Uttrabhadrapada in the month of Kanni in the 10th year of his reign. This occasion was chosen as auspicious for various other services in the temple. If it is take as 6th year in preference to the 5th year the data available would correspond to 4th September 955

A.D., the lunar eclipse day on which the moon was throughout in the asterism Uttirattathi.[57]

In a record of Satyavakya Permanadi identified with Marasimha II, the grant of bittuvatta for the tanks of Araniyur was made. It refers to the 10th regnal year of the king. The other details viz., Angirasa, Asvayuja, Punname, lunar eclipse, Vishu sankranti in the cyclic year corresponds to 972 A.D. The given details correspond to September 25, lunar eclipse and Tula Sankramana.[58]

The incidence of the conjunction of lunar eclipse and Vishu sankranti can be witnessed from the record of the 10th regnal year (972 A.D.,) of western Ganga king Marasimha II.[59]

An inscription of the Western Ganga king Rachamalla IV that is dated in Saka year 899 (977 A.D) refers to the grant of the land made free of taxes by Ayyapa-gavunda to the goddess Bhagavati for worship and food offerings on the occasion of lunar eclipse. There are not many records the Ganga kings referring to the occasion of lunar eclipse.[60]

In lunar eclipse the Sun, moon, and the earth are at the point of maximum stress and represent the culmination of events a catalyst from which only dramatic change can come based on what has already been experienced. All fall within the range of 2 decades .This helps us to understand not only to count the regnal years of rulers but also the sanctity attached by the king while making grants.

A record from Erramatham in Kurnool district belonging to Chalukya Bhuvanaikamalla (Somesvara II) is dated Saka 997, Rakshasa, Chaitra-Punname, Friday, lunar eclipse corresponding to 1075 A.D., April 3. The chief is stated to have raised the temple of Bikkesvara and granted income from taxes to the deity for the worship and offerings on this occasion.[61]

A record from Sangamesvaram in Kurnool district belonging to Tribhuvanamalla (Vikramaditya VI) is dated Chalukya -vikrama year 7, Dundubhi, Jyeshtha-Punname, Monday, Lunar eclipse, Saturday, corresponding to 1082 A.D., May 14, register a gift of land to Mahamandalesvara Satyarasa .[62]

In the 65th year of Anantavarmadeva of Eastern Ganga family grant of land was made to god Somesvara in Marachervu in Saraki-nandu .The details of the date Saka 1061, Tula, su. Kartya-Punnama , Thursday, donot exactly correspond to Saka 1061, current the punname in Tula was Karttika Punnama is ended on Wednesday not Thursday as cited. The details correspond to 1138 A.D., October 19, when there was lunar eclipse on that day.[63]

Of the three inscriptions of the reign period of the Hoysala family two are dated in the reign period of Narasimha while one is dated in the period of Ballala. In one of the records, the king Narasimha and his subordinates Sovideva, Machideva made a grant to god Somanathadeva on the occasion of the lunar eclipse.

In a record from Halebidu in Hassan district dated in Saka 1063= (1140 A.D.), there is a reference to the assignment of the wet lands for worship and offerings, feeding of guests and maintaining the perpetual lamp and a priest in the temple by a chief on the occasion of lunar eclipse. The details of the date Saka 1063, Raudri, Asvayuja, su.15, Thursday are irregular. The Saka year was current, when the lunar eclipse occurred.[64]

An Eastern Chalukya record from Juttiga in Tanuku, belonging to the 17th year of Vishnuvardhana given the details of the date viz., Sravana, Punname, Saturday, Lunar eclipse, equivalent to 1142 A.D., August 8, Saturday. On this day there was a lunar eclipse, mentions that Mudigondamadevi made a gift of 50 inupa yedlu for the upkeep of a perpetual lamp in the temple of Vasukiravi-Somesvara.[65]

A record from Karempudi states that on the day of lunar eclipse in Saka 1076 the gift of 50 goats was made, for a perpetual lamp in the temple of Suresvara of Karemapundi built by him. There was no lunar eclipse in the year Bhava. The details of the date 1076, Bhava, Marggasira, su.15, Thursday, lunar eclipse are irregular. In Bhava, there is no lunar eclipse in the month of Marggasira. There is one in Pausha which occur on Tuesday. This was the intended date it would correspond to 1154 A.D., December 21, Tuesday.[66]

A record of Hoysala Narasimha I records the construction of a temple and the grant of lands for the services of the temple in Saka 1084, Chitrabhanu, Karttika, su.15, Monday, lunar eclipse corresponding to 1162 A.D.,[67]

A Sanskrit inscription from Dindaguru village, Chennaraya pattana Taluk, Hassan district belongs to the reign period of Hoysala Viraballala II corresponding to 1209 A.D.,July 18, Saturday, lunar eclipse. On this occasion the chief minister of Viraballala obtained the village Dindaguru in order to create an agrahara.[68]

A record from Tripurantakam belonging to Kakatiya period refers to the gift of villages made to the god Tripurantakesvara on the day of lunar eclipse. The details of date Saka 1134, Angirasa, Karttika, su.15, Sunday, lunar eclipse, correspond to 1212 A.D., November 10, Saturday.[69]

A record from Tripurantakam refers to the grant of cows for perpetual lamp in the temple of Tripuratakadeva dated Saka 1148, in the cycle year Vyaya, Karttika,su.15, Vaddavara, lunar eclipse corresponding to 1226 A.D., November 5,Thursday.But there was no lunar eclipse on that day. The grant might have been made on that day of lunar eclipse which occurred on Sunday, the 9th August.[70]

The Srirangam inscription of Hoysala Narasimha II record the gift of land for offerings to god during the early morning service on the occasion of lunar eclipse .The details of date namely Saka 1154, Nandana, Chittirai, Svati, Tuesday, lunar eclipse, agree regularly for 1232 A.D., April 6.[71]

A copper plate record from Tagadur of the reign of Hoysala Ballala refers to the establishment of an agrahara and to the grant of gadyanas for the service of the god Kesavesvara on Saka 1174 ,Paridhavi, Asvija, su.15, Thursday, lunar eclipse corresponding to 1252 A.D., September 19.[72]

A Kakatiya chief Gangayya-sahini endowed a village Puliacheruvu in Mottavadi to god Tripurantaka-Mahadeva for the merit of Ganapatideva -maharaja on the day of lunar eclipse.The details of the date Saka 1177, Rakshasa, Sravana, su.15, Tuesday, lunar eclipse correspond to 1255 A.D., July 20.[73]

A record of Kakatiya Ganapati mentions that on the occasion of lunar eclipse one Natavadi Kumara Ganapatideva Maharaja gave 50 cows for a perpetual lamp in the temple of Tripurantaka-Mahadeva. Three records are dated in Saka 1181, Siddharthi, Karttika, su.15, Friday, lunar eclipse, corresponding to 1259 A.D., November 1. The weekday was Saturday not Friday.[74]

A record of Hoysala Narasimha III refers to the erection of temple of Machesvara to the grant of land made for offerings to the god Machesvara on the day of lunar eclipse in the Saka year 1193.[75]

An incomplete inscription from Heggadadevanakote taluk belonging to Hoysala Narasimha III records the grant made in Saka 1198 Isvara, Jeshtha, su.15, lunar eclipse corresponds to 18 th May 1277 A.D. If the Saka year in mistake of 1199.[76]

The record of Ballala while he was at his capital Dorasamundra made a grant in Saka 1244(=1310 A.D.) Saumya, Palguna, su.15, Saturday, when there was a lunar eclipse which were made over to the 126 mahajanas of Vishnuvardhana Hariharapura. The record is dated Saka 1233 ,Sadharana, Chaitra, su.5., Vaddavara and Saka 1244, Durmuti, Magha, su.7,Monday.These correspond to,1310 A.D., February 14,Saturday,when there was a lunar eclipse or 1310 A.D., March 6, Friday, the Saka year being current and Saka 1322 A.D., January 25.[77]

In another record of Ballala III dated in Saka 1243(1320A.D.) Mahapradhana Ketaya dannayaka, son of Madhava obtained two villages Gommatahalli and Kachagavudana Madeyahalli from the king and made over it to one Naranadevanna, for the creation of the agrahara, to be donated to 30 Vedic Scholars of various gotras on the occasion of lunar eclipse. The details of date Saka 1243, Raudri, Sravana, su.15, Monday, Sravana-nakshatra, lunar eclipse correspond to 1320 A.D., July 20.[78]

An inscription from Panem states that on the day of lunar eclipse dated Saka 1241=1320 A.D Mummadi Juttaya-Lenka, the Governor of pedakallu and other southern districts during the reign of pratapa-rudradeva, made a gift of the fees to the temple of Viranarayana at panyamu .The details of the date Saka 1241, Siddharthi,

Magha, su.15, Monday, lunar eclipse, corresponding to 1320 A.D., January 26 when a lunar eclipse did occur.[79]

A copper plate charter in Sanskrit and in Nagari script refers to the rule of Vijayanagara king Harihara, registers the grant, of the village Gjattadahalli in Sigenadu-sime to the Vedic Scholars as an agrahara dated the Saka 1308 expressed in chronogram *vasu- vyama-vahni-indu* , Krodhana, Nabha ((i.e) Sravana), su. 15, lunar eclipse, Wednesday, correspond to 1385 A.D., July 22.[80]

This inscription in Sanskrit and Kannada and in Nagari script records a gift of the villages Kadaluru, Hire Kadalur and Maidanahalli renamed Hariharapura, by the king Harihara II of Vijayanagara to the Vedic Scholars of that place. The date given in Saka year is expressed by a chronogram *Vasu-chandra-agni-vidhu* is Saka 1318, Dhatu, Sravana, lunar eclipse**.** The tithi, obviously the full moon day, occurred on Friday, 21st July, 1396 A.D**.,** but there was no lunar eclipse on that day. But the lunar eclipse occurred on June 21, of that year, in the month of Ashadha. This appears to be the intended date.[81]

A record from Srirangam in Trichy district registers gift of cows and lands and a silver vessal by Sivandelundan-Samanttanar for providing food and milk offerings to the god. The details of date namely Saka 1327, Parthiva, Arpasi 13, lunar eclipse; correspond to 1405 A.D., October 11, Sunday.[82]

A copper plate record belonging to the reign period of Harihararaya-vodeya, son of Devaraya II endowed a paddy land under the tank to the god Vijayanatha of Kanakagiri on the occasion of lunar eclipse. This copper plate is dated in Saka 1344, Subhakrit, Sravana, su.15, lunar eclipse; correspond to 1422 A.D., August 2.[83]

In a record from Macherla in Guntur district dated Saka 1351, Saumya, Chaitra, su.15, corresponds to 1429 A.D., king Devaraya II is said to have endowed a village Gajanur in Uduvanka nad yielding an annual income of 44 gadyanas by the gaudas of the village Hongannihalli for worship and offerings and burning of perpetual lamp to the temple of god Divyalingesvara of Haradanahalli on the occasion of lunar eclipse.[84]

On the day of lunar eclipse dated Saka 1422, Raudri, Urjja, lunar eclipse, corresponding to 1500 A.D., November 5, Thursday on which day there was a lunar eclipse. King Gajapati in his Idupulapadu inscription is stated to have made a gift by Pratapa- Rudra of the Village Idvulapadu. [85]

This Sanskrit record ,engraved in Nagari script, belonging to the reign of Krishnaraya of Vijayanagara made a royal grant of the village Hiri Jettiga in Velluru-sima of Hosala-desa to Srinivasadhvari,well-versed in Sastras, Kavyas, Puranas,etc., It is dated Saka 1434, Angirasa, Asvayuja-purnima, Induvasara, Revati-nakshatra and lunar eclipse corresponding to 1512 A.D., September 25.[86]

A Sanskrit charter in Nagari characters in Hassan taluk registers a grant of the village Kittane, in Hasana-sime of the Hoysana kingdom, renamed as Tirumalapura after his queen Tirumalamba, by Krishnaraya of Vijayanagara. The village was gifted to several bramanas in the Saka year 1437, Yuva, Sravana , su.15, Wednesday, lunar eclipse, regularly corresponding to 1515 A.D., July 25.[87]

A Sanskrit record in Nagari characters registers gift to the Vedic Scholars of various gothras, of the village Venkatadri-Samudra alias Honnayyanahalli by king Sadasivaraya of Vijayanagara to god Vittalesvara on the day of lunar eclipse. The record is dated Saka 1467, expressed by the chronogram *turanga –anga –veda –indu*, Visvavasu, Ashada – purnima, Saumya- vasara and lunar eclipse regularly corresponding to 1545 A.D., June 24.[88]

Records from Pushpagiri belonging to Sadasivadeva-maharaya mentions that Sadasivadeva-maharaya made a gift for the decorations and illuminations of the temple of Mallikarjuna-deva at Pushpagiri in Halebidu were granted by the king on the occasion of the lunar eclipse. The details of the date Saka 1482,Thrusday,the 15th bright fortnight of Chaitra, Siddharthi, corresponding to 1560 A.D.[89]

An inscription from Srirangam dated on the day of lunar eclipse in the Saka year 1489=1567 A.D. describes the ten avataras in verses and records gifts of lamps for Ranganatha, Lakshmi, Vishvaksena, Garutman etc., and gold for conducting festivals and offerings to the various deities by Kumara Achyuta, son of Chinna-Chevva and Murtyamba. The details of date of the record namely Saka 1489

expressed by the chronogram *nidh- ibha- abdhi- chandra*, Prabhava, Vaishaka, su. Purnima correspond to 1567 A.D., April 23, Wednesday. The nakshatra was Visakha. There was an eclipse of the moon on this day is not specified in the record.[90]

A record from Piriyapattana taluk mentions the village of Virambudhi was granted as an agrahara to Narasimha-bhatta, by Vira Viredeva,son of Srikanthadeva of Changalva family to god Viresvara on the occasion of Siva puja, during a lunar eclipse. The details of the date Saka 1489, Prabhava, Magha, su.10 corresponding to 1568 A.D., January 9.[91]

A Devalapura inscription records the setting up of a lamp-post and a door-frame in the Lakshmikanta temple of Devalapura from Mahamandalesvara, by Chikka Allappa-nayaka. This record is dated Saka 1493, Nandana, Uttarayana, Grishma, Jyestha, su 15, Friday, lunar eclipse. However, there details regularly correspond to 1572 A.D., May 22. The Saka year may be a mistake for 1394.[92]

A copper plate record states that the chief of Tanjore Chavappa Bhupala granted 4 villages in the Siranadu of Mayura desa for burning a lamp to the god Ramachandra and for feeding in the matha on the occasion of lunar eclipse. The details of the date Saka 1502, expressed by the chronogram *netra-banasata-indu*, Vikrama, Karttika, lunar eclipse correspond to 1580 A.D., October 22.But there was no lunar eclipse on that day.[93]

A record belonging to the reign period of Vijayanagara ruler Venkatapati-maharaya states that Krishnaappa nayaka made a grant of 200 varahas paid for the watchmen from the money received from the temple endowments of the Gods Janardhana on the day of lunar eclipse. The details of this date Saka 1509, Sarvajit, Bhadrapada, su.15, Sunday, Vyatipata, lunar eclipse. The details correspond to Wednesday, September 6th, 1589 A.D.[94]

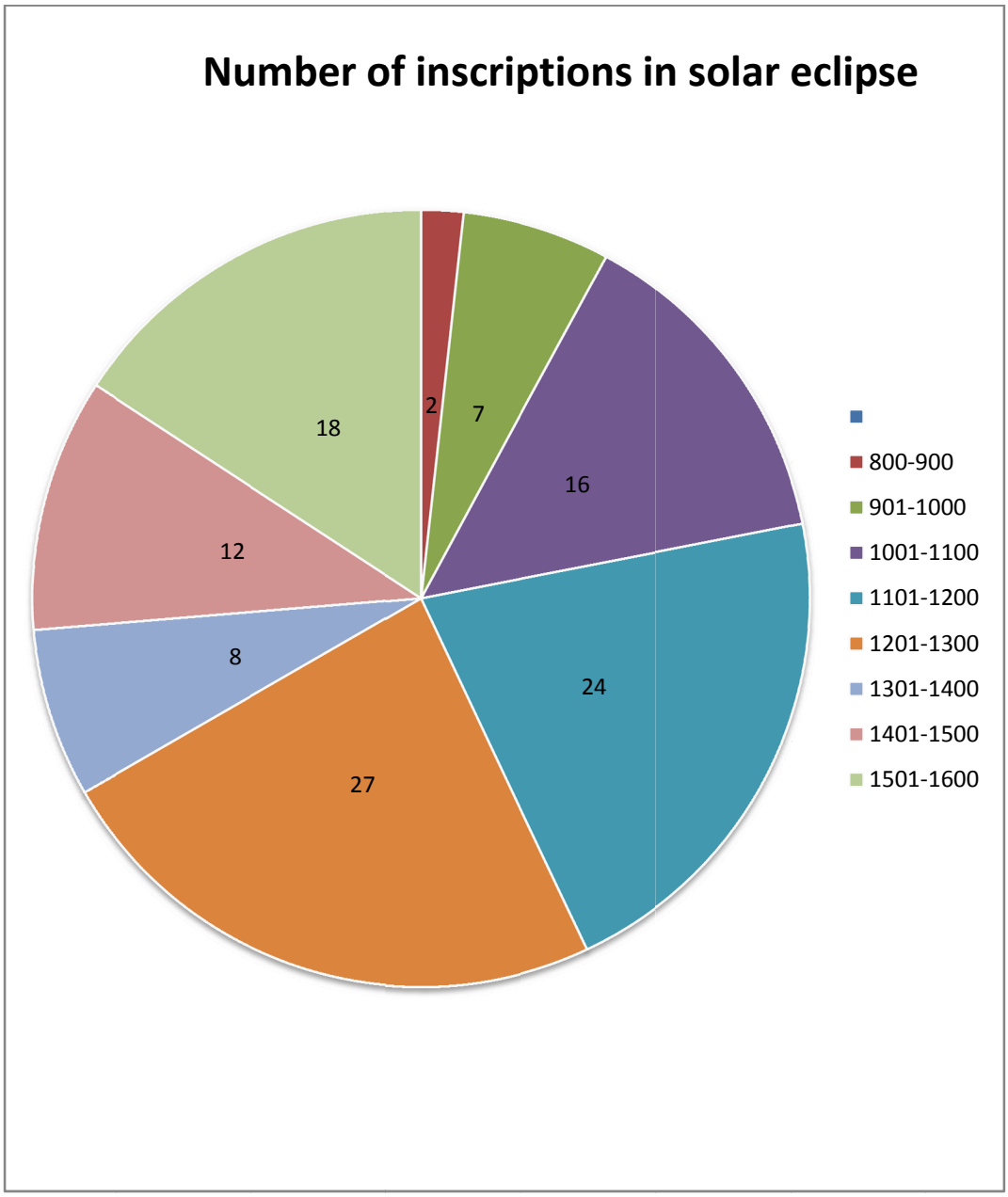
Table-4.1

Number of inscriptions cited in solar eclipse

Period	Solar Eclipse
800-900	2
901-1000	7
1001-1100	16
1101-1200	24
1201-1300	27
1301-1400	8
1401-1500	12
1501-1600	18

Graph-4.1

Number of Inscriptions in Solar Eclipse



This graph exhibits the number of inscriptions in solar eclipse. The maximum number of inscriptions is witnessed in 12th century and the minimum in 9th century.

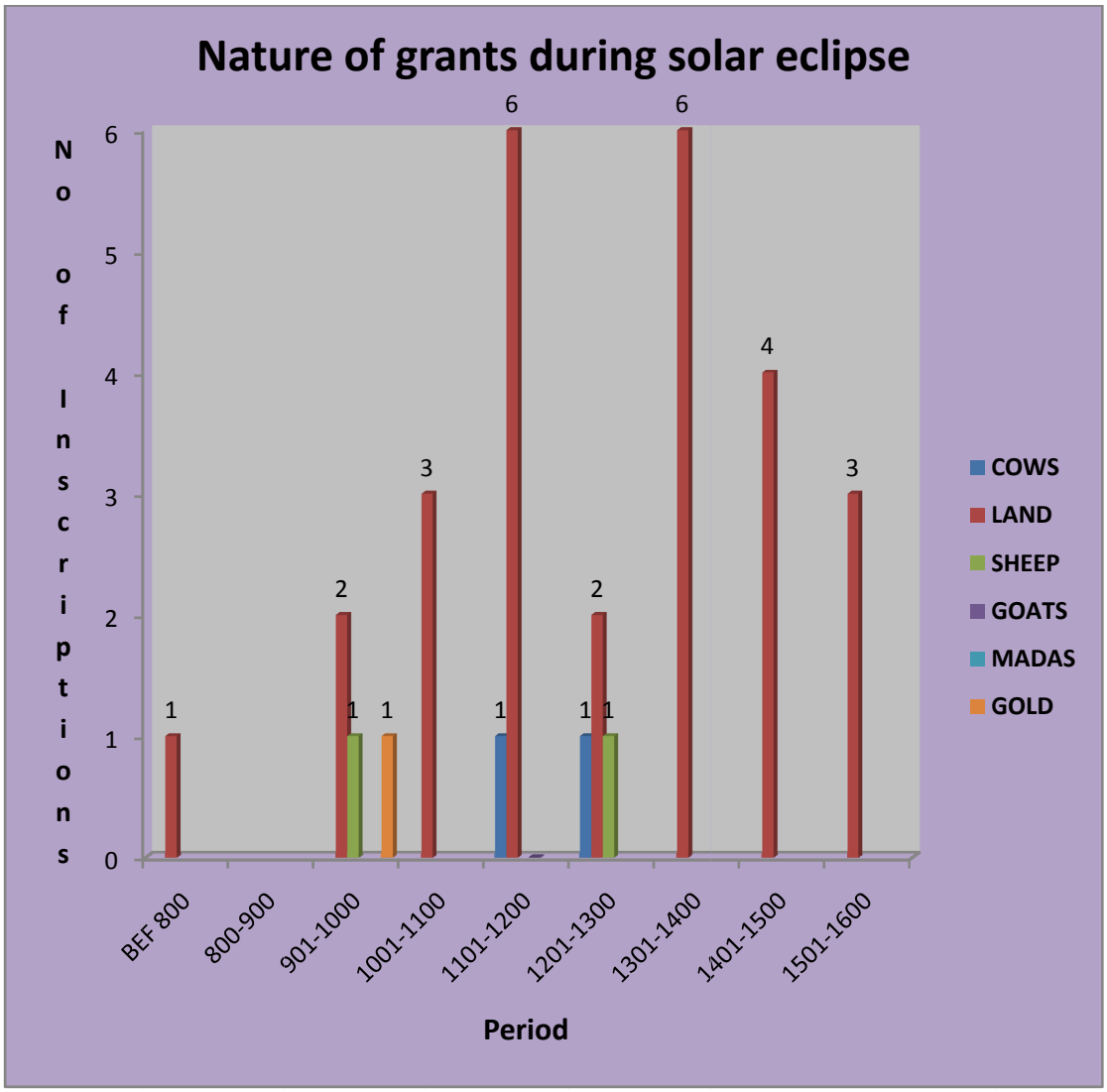
Table-4.2

Nature of grants during solar eclipse

Period	Nature of grants during Solar Eclipse				
	Cows	**land**	**sheep**	**goats**	**Gold**
Before 800	-	1	-	-	-
800-900	-	-	-	-	-
901-1000	-	2	1	-	1
1001-1100	-	3	-	-	-
1101-1200	1	6	-	-	-
1201-1300	1	2	1	-	-
1301-1400	-	6	-	-	-
1401-1500	-	4	-	-	-
1501-1600	-	3	-	-	-

Graph-4.2

Nature of Grants during Solar Eclipse



This graph shows that more land grant are witnessed in inscriptions than cows, goat, sheep etc., that is to meant that more in the agricultural productions which in result yield more grains for food offerings to the deities and more feeding of the Vedic Scholars. More land grants have been given because the yield out of the lands is used for different purposes. After the harvesting the different crops yielded different food grains, the remaining grass are used for grazing of the cattle sheep etc., that is why the gifts of cattle, sheep etc are given as gifts.

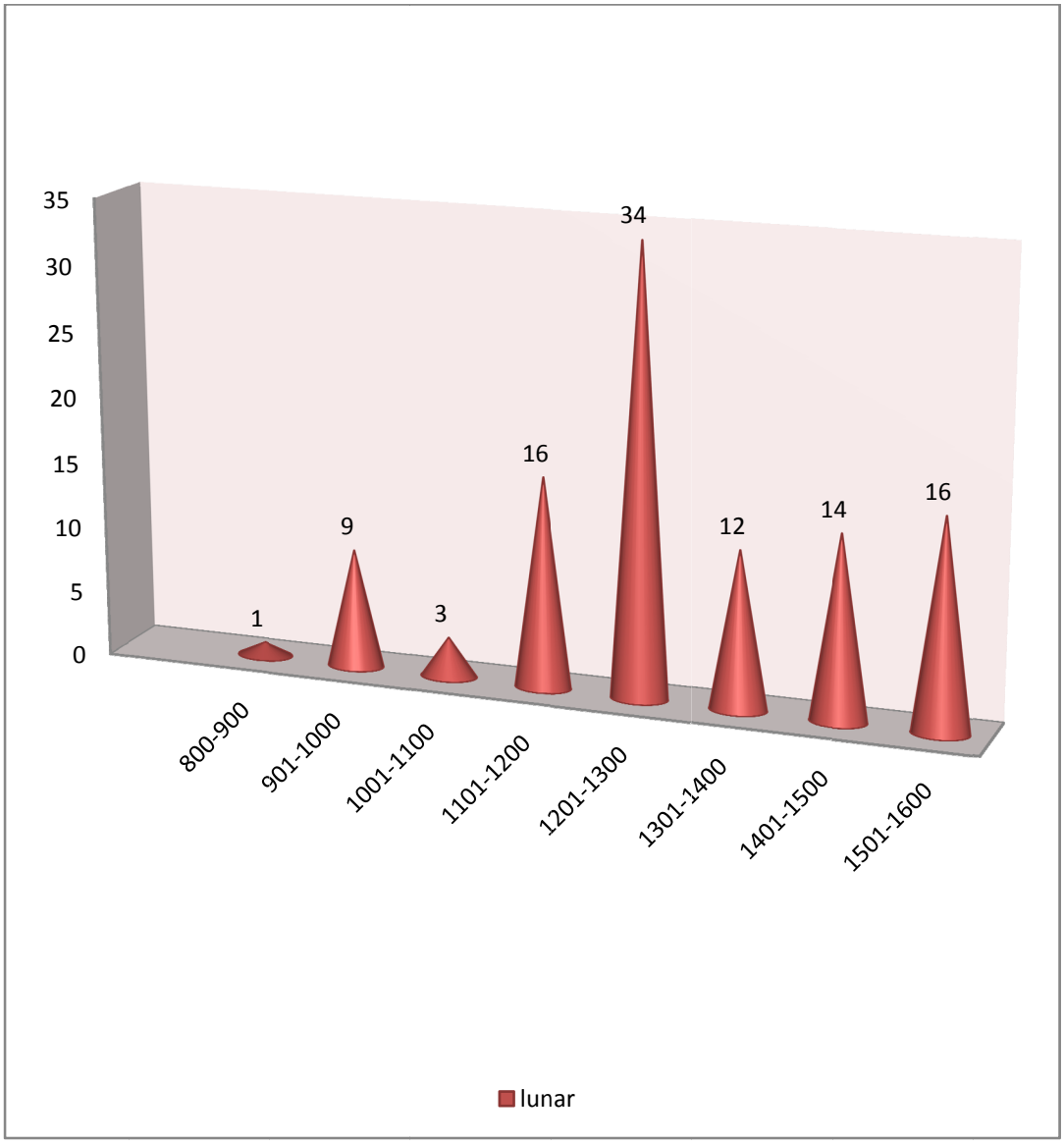
Table-4.3

Number of Inscriptions quoting in Lunar Eclipse

Period	Lunar Eclipse
800-900	1
901-1000	9
1001-1100	3
1101-1200	16
1201-1300	34
1301-1400	12
1401-1500	14
1501-1600	16

Graph-4.3

Number of Inscriptions quoting in Lunar Eclipse



This graph exhibits the number of inscriptions in lunar eclipse. The maximum number of inscriptions is witnessed in 13th century and the minimum witnessed in 9th century

Table-4.4

Number of Grants Given in Lunar Eclipse

Period	Cows	Land	Goat	Gold
bef 800		1		
800-900		1		
901-1000		4		1
1001-1100	1	3	1	
1101-1200	4	6		
1201-1300	1	6		
1301-1400		1		
1401-1500		3		
1501-1600		1		

Graph 4.4

Nature of grants given in lunar eclipse

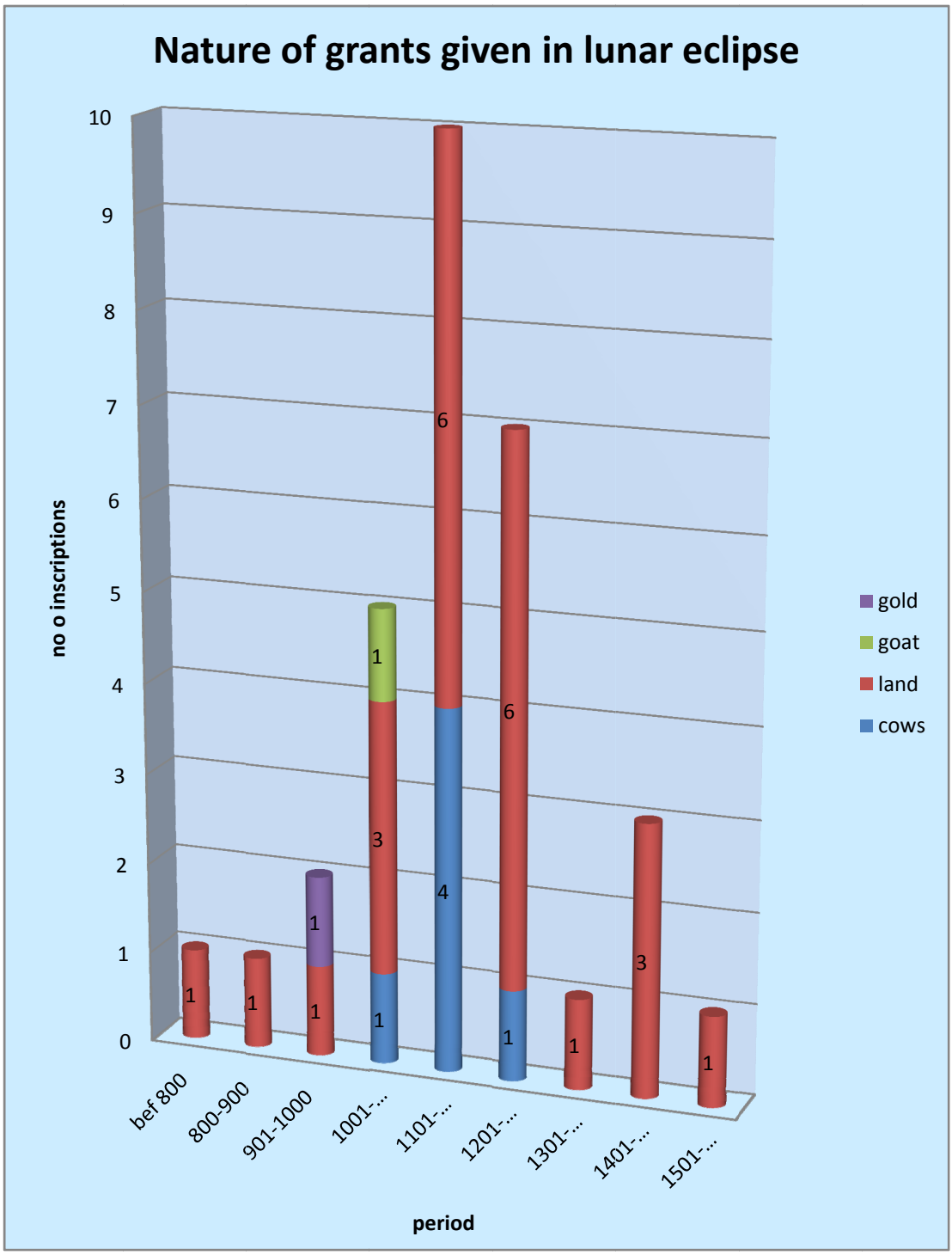


Table-4.5

Comparison of Solar and Lunar Eclipses

Period	Solar eclipse	Lunar eclipse
800-900	2	1
901-1000	7	9
1001-1100	16	3
1101-1200	24	16
1201-1300	27	34
1301-1400	8	12
1401-1500	12	14
1501-1600	18	16
Total	114	105

Graph 4.5

Comparison of Solar and Lunar Eclipses

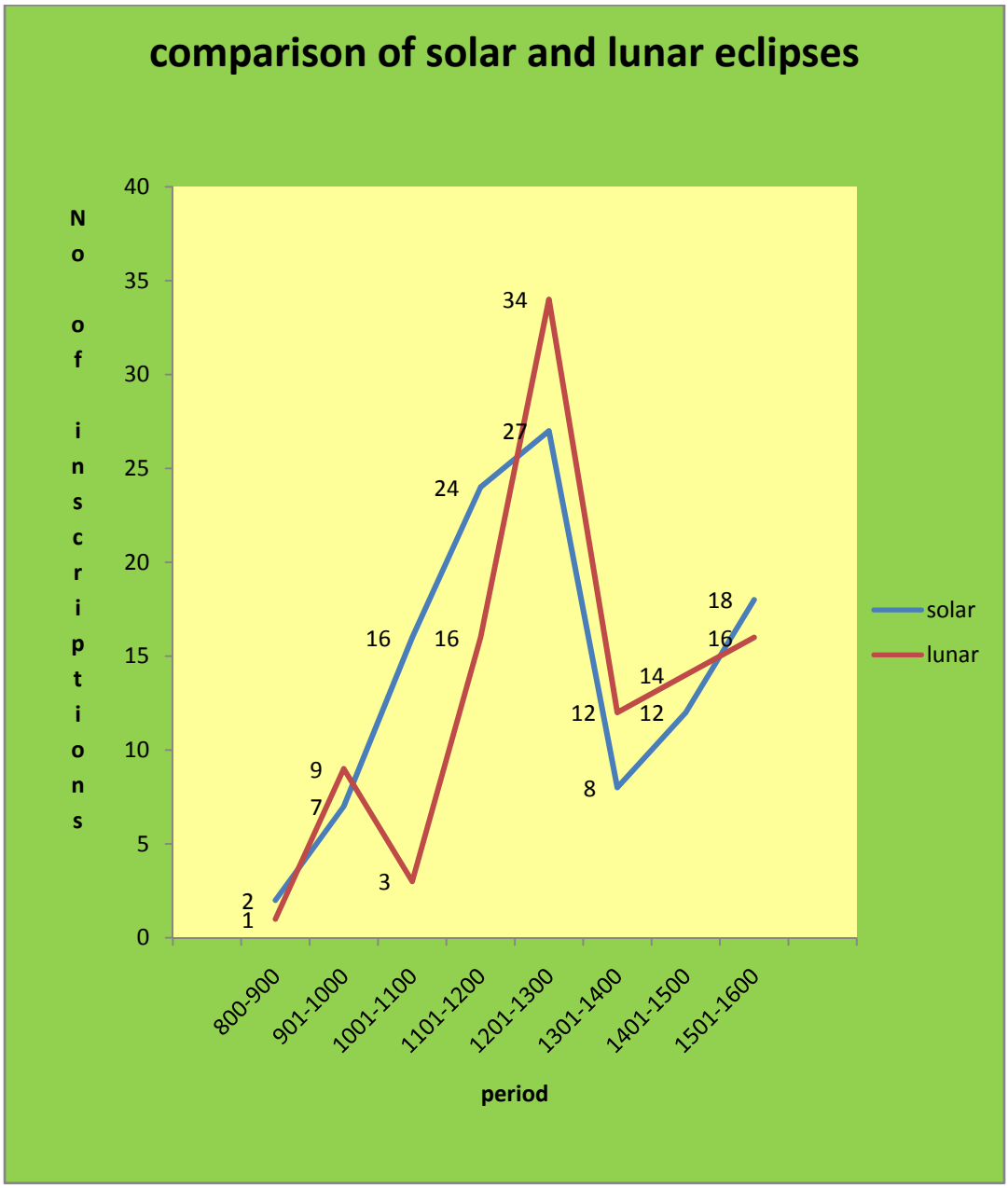


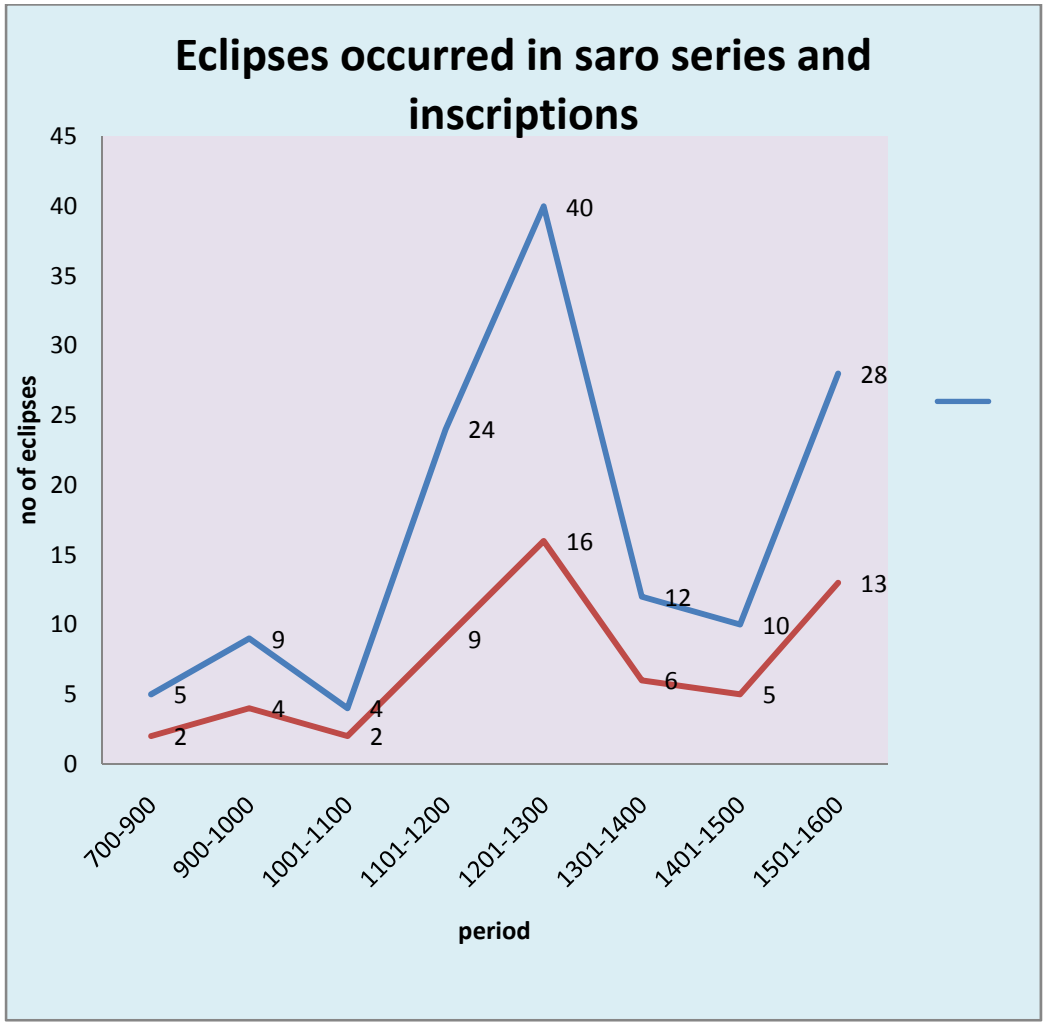
Table 4.6

Eclipses Occurred In Saros Series and Inscriptions

Period	Eclipses Occurred From Saros Series	Eclipses Taken From Inscriptions
700-900	5	2
900-1000	9	4
1001-1100	4	2
1101-1200	24	9
1201-1300	40	16
1301-1400	12	6
1401-1500	10	5
1501-1600	28	13

Graph 4.6

Eclipses Occurred in Saros Series and Inscriptions



In ancient days astronomers are aware of saros series. The maximum number of eclipses taken from inscriptions in the period of 13 century and the minimum is in 9^{th} and 11^{th} century.

4.5. CONCLUSION:

The auspicious and religious functions were observed on the day of eclipses. The southern rulers gave the grants not only to mark such events but also endowed the pariharas in several ways so as to get rid off the evil effects.

The endowments made to the temples are with the purpose of maintaining perpetual lamp and to provide the food offerings to the deities. A few inscriptions record the grant o lands for feeding the Vedic Scholars on the occasion of solar eclipse. On the occasion of solar eclipses gift has been made or different purposes like worship, offerings, and perpetual lamp as well as Vidya dana for the merit of their father, Tulabara ceremony, the repairs of the temples, consecration of the temples etc.,

NOTES AND REFERENCES:

[1] *JAHRS, Vol. V, pp.101-04.*

[2] *Manavika Karnataka,Vol.15,No:3*

[3] *A. R,Ep., 1930-34: No: 130*

[4] *Ep.Ind., Vol.XLII, pp.35*

[5] *Indian Antiquery, Vol.VII, pp.19*

[6] *Ep.Carn. Vol 3, No :185,859,975*

[7] *IWG., No:51;*

[8] *IWG .,No:4*

[9] *IWG .,No 90*

[10] *Ibid., Vol 4; No:126*

[11] *SII.,Vol XIX:No:419*

[12] *Ep.Carn: Vol 3; No:95*

[13] *SII., Vol: XIX :No: 295*

[14] *IWG No: 154*

[15] *Ep.Carn. Vol 3: No: 56.*

[16] *SII. ,Vol XXVII: No :16*

[17] *Ep. Carn. Vol: 3: No: 123*

[18] *Ibid..Vol 5; No: 4*

[19] *Ibid., Vol XII: No:41*

[20] *SII., Vol XXVII, No:21*

[21] *Ibid., Vol X: No:73*

[22] *Ep. Carn. Vol 12: No:67*

[23] *Ibid., Vol 12 No: 223*

[24] *SII., Vol X: No:123*

[25] *Ibid., Vol X: No:705*

[26] *Ep. Carn: Vol 5, p. 7*

[27] *Ibid., Vol 5: p. 563*

[28] *SII., Vol X: No :242*

[29] *Ep.Carn :Vol 8: p. 367*

[30] *SII., Vol X :No 278*

[31] *Ep. Carn : Vol 12, p. 116*

[32] *Ibid., Vol 8 : p. 81*

[33] *SII., Vol XXIII: No 598*

[34] *Ibid., Vol X : No 363*

[35] *Ibid., Vol X: No 414*

[36] *Ibid,. Vol X : No 452*

[37] *Ibid., Vol X: No : 464,465*

[38] *Ep.Carn Vol XII: p.364*

[39] *Ibid,. Vol 3: No: 138*

[40] *SII., Vol XXVII : No:54*

[41] *Ibid., Vol XXVII: No 335*

[42] *Ep. Carn: Vol 8: p.177*

[43] *Ibid., Vol 12: p.186*

[44] *Ibid., Vol 11: p.277-278*

[45] *SII., Vol XXVII: No:612*

[46] *Ep. Carn Vol 7 p.354*

[47] *SII., Vol XXVII: No 185*

[48] *Ep.Carn., Vol 5, No:42,p.909*

[49] *Ep.Ind., Vol.XIX, pp.254*

[50] *A.R.Ep., year 1916-17,No:A 22*

[51] *Ep.Ind.,Vol.V,pp.122*

[52] *IWG., No: 50*

[53] *SII., Vol I, No: 36*

[54] *Ep.Ind., Vol.VIII,pp.236*

[55] *Ep.Ind., Vol.XL, pp.42*

[56] *IWG.,No: 119*

[57] *Pd., No:30,part I, p.27*

[58] *Ep. Carn; Vol 7 p. 95*

[59] *IWG No :143*

[60] *Ep. Carn Vol 3: p.366*

[61] *SII., Vol XXVII: No : 17*

[62] *Ibid., Vol XCVII: No 18*

[63] *Ibid,. Vol X: No 690*

[64] *Ep. Carn Vol 9: p.318*

[65] *SII., Vol X: No :13*

[66] *Ibid,. Vol X; No 134*

[67] *Ep. Carn., Vol 10: p.311*

[68] *Ibid., Vol 10: p.126*

[69] *SII., Vol X: No 258*

[70] *Ibid,. Vol X:No:266*

[71] *Ibid,. Vol XXIV : No 259*

[72] *Ep. Carn., Vol 10: p.525*

[73] *SII., Vol X : No : 346*

[74] *Ibid., Vol X: No: 367*

[75] *Ep. Carn: Vol 12: p.268*

[76] *Ibid., Vol 3: p.449*

[77] *Ibid., Vol 5: p. 10*

[78] *Ibid., Vol 3: p. 32*

[79] *SII., Vol X: No 528*

[80] *Ep. Carn.,Vol 9: p.249*

[81] *Ibid,. Vol 8: p. 325*

[82] *SII., Vol XXIV: No 316*

[83] *Ep. Carn., Vol 4: p. 237*

[84] *SII., Vol X : No 583*

[85] *Ibid,. Vol X :No 732*

[86] *Ibid., Vol 7: p. 131*

[87] *Ibid., Vol 8: p.218*

[88] *Ibid., Vol 7 :p.100*

[89] *Ibid., Vol 9: p.802*

[90] *SII., Vol XXIV : No 488*

[91] *Ep. Carn., Vol 4: p.562*

[92] *Ibid., Vol 7: p.154*

[93] *Ibid., Vol 3 p.218:*

[94] *Ibid., Vol 11: p.415*

CHAPTER - 5

ASTRONOMICAL INSCRIPTIONS WITH RESPECT TO THE MOVEMENT OF PLANETS LIKE JUPITER AND OTHER PLANETS

The reckoning of dates of the inscriptions are based on the revolution period of Jupiter through the zodiac signs of the Zodiac i.e., *viyalavattam.* According to the *viyalavattam*, the year was named after the sign of the zodiacal constellations in which the planet Jupiter stays in a sign for a year (approximately). The climatic conditions of Kerala have a bearing on the engraving of inscription on stone. They would have chosen the non rainy season for the engraving of records. The dating in Tamilnadu and Andhra are a mixture of *unisolar* and *chandramana*.

Sun stays in a sign for a month while the Moon stays in a sign for 2½ days. Before the engraver fulfils the job the Sun will be moving over to another sign apparently governed by the climatic conditions. Because Kerala experiences incessant rains for the major part of the year, the movement of Jupiter is taken into consideration, not only for the engraving of the records but also for making the grants. Also the other reason being, that Jupiter stays in a sign for a particular period constantly.

Some of the following salient features that are observed with respect to the Jupiter movement in Kerala.

5.1. GRANT MADE WHEN JUPITER WAS IN ARIES (MESHA).

The Huzur office plates of 10th century A.D., states that when Jupiter stood in Mesha and the Sun in Karkataka, king Raman Kodaivarman of Munni-nadu granted together with the *rakshabhoga* of 200 parai of paddy, as measured by the parai holding ten nali his valagam, muttam, karai and vayal, in the presence of the members of the Dvadasagana who had met, without any dissensions among them, in the temple (at Tiruvallaval) for the requirements of oil. This shall be collected and furnished on the

day of svati nakshatra in the month of vaiyyasi.If the idaiyidar cause any damage at serikkal, they shall be liable to a fine of one tadam of oil.[1]

An inscription engraved in the central shrine of the Vishnu temple at Tirukkakkarai belonging to 13th Century A.D. seems to mention the Kali year 3705. In the year opposite to the three thousand seven hundred and five which was current and it was during this year when Jupiter stood in Mesha the god in the temple at Tirukkakkarai was caused to be consecrated probably on which day the birth star of the donor falls. It may be inferred from the content of the inscription that the auspicious occasion coincides with the consecration ceremony. A record from Tirukandiyur lends support to this. It states that the custom of reckoning time from the date of the construction of the temples might have been considered as an important event perhaps coeval with the founding of the city.[2]

5.2 GRANT MADE WHEN JUPITER WAS IN TAURUS (RISHABHA):

An inscription in Vatteluttu alphabet and Tamil language is engraved in the Vishnu temple at Tirukkakkarai. It is dated in the 2+4th year of King Baskara Ravivarman. In this year it is stated that Jupiter was in Rishabha rasi. The Jupiter in Rishabha also has occurred in the years 980, 992, 1004,1016,1028,1040 A.D. If the regnal year quoted is corrected as second opposite to the 24th year then the date would correspond to 1004 A.D. The grant was made on this occasion by Kodai Keralan.[3]

There is an inscription which is reported to have been engraved on the south side of the temple at the village of Tirukkannankodu in the Eraniel Taluk, Dated in the 10th century A.D., of the kali year 4052, it states that the grant of lands was made to the temple at Tirukkannankodu for offerings,by a certain Kandanadangi to the god.[4]

The Tirumulikkalam inscription of Bhaskara Ravivarman is found on the base of the front mandapa of the Vishnu temple at Tirumulikkalam written in Vatteluttu characters and Tamil language, it is dated in the year opposite to the forty eighth of the reign of Bhaskara Ravivarman, When the Jupiter was in Rishabha rasi. King

Manukuladityan made grant of lands for the maintenance of feeding the Vedic Scholars.[5]

5.3 GRANT MADE WHEN JUPITER WAS IN GEMINI (MITHUNA):

A Tamil record from the Venkatachalapati temple in Alagiyapandiyapuram in the Tovalai taluk of the Padmanabha division is dated in the Kollam year 299 (1124 A.D.). During this year when the Jupiter was in Mithuna, the people of Adiyanur alias Alagiyapandiyapuram in Nanjilnadu donated land to the Vishnu temple of Pavitra Manikka Vinnagar Emperumal.[6]

We also come to know that from the Huzur plates belonging to the temple at Tiruvallam that when the Sun was in Mesha, an importance transaction took place.[7]

An inscription from Tirukkakkarai engraved on the Surru-mandapa of the Vishnu temple is in Vatteluttu alphabet and Tamil language. It registers the gift of the rakshabhoga to the temple when the Jupiter stood in Mithuna rasi.[8]

A Tiruvalla inscription in the Vatteluttu alphabet of 13th century A.D., and the Tamil language is engraved on the north base of the mandapa in front of the central shrine in the Siva temple of Tiruvarruvay at Tiruvalla, Quilon division of the Travancore state registers a gift of money for the bathing of the god of Tiruvarruvay when Jupiter was in Mithuna rasi.[9]

5.4 GRANT MADE WHEN JUPITER WAS IN CANCER (KARKATAKA RASI):

A record of the Venadu king Manikantha Ramavarman from the Vishnu temple at Mitranandapuram dated on the first day of the Kumbam of the year in which Jupiter was in Karkataka rasi i.e., in the zenith of its power. This inscription may be

assigned to Kollam 371; When Jupiter was in Karkataka, (1196 A.D.). On this occasion the Venadu king gave lands for the food offerings to the temple.[10]

Another record engraved in the Pillaiyar temple at Eraniel is dated in the Kollam year 929, Saka 1675 = 1753 A.D when Jupiter was in Karkataka – rasi. This occasion was chosen for making the grant of money for feeding persons on dvadasi days, for sacred lamps and for performing abhisheka to the gods on pradosha days besides other items.[11]

5.5 GRANT MADE WHEN JUPITER WAS IN LEO (SIMHA-RASI):

A record from the Vishnu temple at Tirukkakkarai is dated in the 58th year (1031 A.D.) of Bhaskara Ravivarman I. In this year when Jupiter was in Simha-rasi the Karanmai lands taken by Keralan Polan of Salaveli agreed to maintain a perpetual lamp.

Dr. L.D. Swamikannupillai has reckoned the date of Bhaskara Ravivarman with the help of the details of date like 14th year (1060 A.D) coinciding with the Jupiter in Makara and his 43rd year (1021 A.D) when Jupiter was in Tula. It may be mentioned that the interval between the two dates is 39 years. Perhaps the regnal years quoted may belong to two different kings of the same name.[12]

A record from the Vishnu temple at Tirukkakkarai is dated in the 11th year opposite to the 5th year of the reign of king Indu-kodaivarma-Tiruvadi. In this year Jupiter was in Simha rasi. It registers the grant of a land called Vettikkodu, by a chief of Kalkkarai-nadu named Kannan Puraiyan ,to the tem[ple of Tirukkalkkarai-Bhatara. The initial date of the king must be 955 A.D.[13]

5.6 GRANT MADE WHEN JUPITER WAS IN VIRGO (KANNI RASI):

It is interesting to find a record from the Vishnu temple at Tirukkakarai assignable to 10th century A.D. It belongs to the reign period of Indu- Kodaivarman. In this record one Kannan-Kumaran of Karilam is stated to have made grant of money to the temple here.[14]

In another inscription from the temple at Sivagiri it is stated that money was invested by a brahmin lady named Kandan Tiruvikkirami, for feeding the agnihotris who assemble in the temple of Sivagiri – Mahadeva , on the thirteenth tithi of the dark fortnight in the month of Kanni of each year. This grant was made when Jupiter was in Kanni rasi in the month of Mesha.[15]

Huzur office plates states that on the day of the sankranti when Jupiter stood in kanni and the Sun was entering Dhanus, the worthies (urar and tiruvadimar) of the town met in the yaga-mandapa situated in front of the temple of the god Tiruvallaval-appan and Iravi-Srikanthan,the governor of Venboli-nadu gave his land to the temple.[16]

5. 7 GRANT MADE WHEN JUPITER STOOD IN LIBRA (TULA RASI):

A record from the Vishnu temple at Tirukkakarai belonging to 13th century A.D. states that one Polan Ravi made the gift of gold ornament to the deity of that place.[17]

Another record from the temple at Tirukkannankodu assignable to 11th century A.D., states that in the month of Ani of the year in which Jupiter was in Tula rasi one Somayaji Narayanan donated land as *enadipperu* for feeding at Tirukannankodu.[18]

Mitranandapuram inscription registers the gifts made to meet the expenses of the temple at Mitranandapuram .The first of the grants recorded is said to have been made in the month of Mithuna when Jupiter was in Tula ,by a certain Kunran keralan, a resident of Perungulam, who supplied food for feeding a Vedic Scholars.[19]

From the Huzur plates belonging to the temple at Tiruvallam we come to know that on the day of Visakha corresponding to a Wednesday, in the Solar month, Makara, when Jupiter stood in Tula, Kandan Kumaran alias Maluvakkon of Kilumalai made arrangements for the *panchamahasabdas* to be sounded on the occasion of offering Sribali in the temple of Tiruvallaval-appan.

There is an inscription found in the temple of Ganapatinadai at quilon. It is written in the Grantha or early Malayalam characters. It belongs to the reign of a king called Jayasimha alias Virakeralavarman and is dated the Kollam year 671=1496 A.D., Wednesday, June 22. In this year in the solar month Mithuna, when Jupiter stood in the Tularasi,in the Vrischika lagna and in the nakshatra Anuradha, the ascetic Nityaprajnamuni performed the Abisheka to the god Govinda in Netrapura, after renovating the temple.[20]

The Tirukkadittanam inscription of the reign of the king Bhaskara Iravivarma Tiruvadi is written in Vatteluttu alphabet on the base of the central shrine of the Vishnu temple at Tirukkadittanam. In the forty seventh year opposite the second of the reign of the king Bhaskara Iravivarma Tiruvadi, Jupiter stood in Tula rasi. It records the donation made by a private individual to the temple at Tirukkadittanam.[21]

The famous Mitranandapuram copper plates states that beginning with the month of Mithna, when Jupiter stood in Tula ,in order to meet the daily expenses, food offerings Kunran Keralan granted seventy two parai and six nali (as measured) by the idangali and three ulakku of paddy.[22]

The Mamballi plates written in Vatteluttu characters and in the Tamil language is dated in the 149th year of the Kollam era, and records that on a Sunday corresponding to the Asvati nakshatra in the month Vrischika when the Jupiter stood in the Tula rasi, one Umaiyammai of Tirukkalayapuram set up an image in the temple at Ayirur. The date equals to Monday, the 10th November 973.A.D. records the gift of land made by Srivallavangodai to the god of the temple at Tiruvanvandur for food offerings.[23]

5.8 GRANT MADE WHEN JUPITER WAS IN SCORPIO (VRISCHIKA-RASI):

The Tiruvallam inscription in front of the Brahma shrine at Tiruvallam is in Vatteluttu alphabet and Tamil language, dated on the 5th solar day, of the month Makara, in the Kollam year 411,when the Jupiter was in Vrischika rasi and the Nakshatra was Puram it was equivalent to 1235 A.D., December 3.The gift made by one Vijaiyan Iravi of Tekkinkavu on this day.[24]

Inscription of Vira Ravi Ravivarman alias Kulasekhara-pperumal who belonged to the kila-pperur illam and the Tiruppappur Svarupam, was the adorer of god Padmanabha. He is said to have built the front mandapa in the Adikesava-perumal temple, on Monday the 7th day in the month of Chittirai, in the Rohini nakshatra, Saumya yoga and Kanni rasi in the Kali year 4704, Kollam 778, when Jupiter stood in the constellation Vrischika and Saturn in Tula.

The Manalikkarai inscription of Ravikeralavarman of Venadu is dated in the Kollam year 410+1(=1236A.D.) the month being Mesha and the solar day 27th, when Jupiter was in Vrischika.[25]

In Mitranandapuram copper plates which states that, in the month of Tula, when Jupiter stood in Vrischika, Suvakaran Maniyan of Malaiyamanram provided the expenses of the god for purchasing ghee offering at Mitranandapuram.[26]

5.9 GRANT MADE WHEN JUPITER WAS IN THE SAGGITARIUS (DHANUR RASI):

A record from Tirukkakkarai of king Bhaskara Ravivarma Tiruvadi, dated 10th century A.D. states that when Jupiter was in the Dhanur rasi, on the twentieth day in the month Vrischika gift of land dues were made for burning perpetual lamp.

Three inscription of Vira ravi Ravivarman records that after the kali year 4704 had expired, When Saturn Stood in the constellation Vrischika and Jupiter in Dhanus, in the Kollam year 779 on Saturday, the 26th of the Month Ani, which was the seventh

tithi of the dark fortnight Hasta Nakshatra and Mina rasi, structures in the temple of Adikesava-pperumal were raised.

An inscription from Tiruvallam dated Sunday ,the 10th (Solar day) expired, of the month of Makara when Jupiter stood in Dhanus rasi in the Kollam year 412, a deed was made in the temple at Tiruvallam –sakki. [27]

5.10 GRANT MADE WHEN JUPITER WAS IN THE CAPRICORN (MAKARA RASI):

In the month of Makara of the year when Jupiter stood in Makara, on the occasion when Ranajnabhatarar Tiruvadi was pleased to remain in the Mitranandapuram temple, Devan Chakrayudan of Pirasana – Sankaramangalam, granted lands for the food offerings.[28]

According to an inscription from the Vishnu temple at Tirukkakkarai, in the year twenty –one opposite the second of the reign of king Bhaskara Ravivarma Tiruvadi, when the Jupiter stood in the Makara rasi, on the seventh day of the solar month Vrischika, lands have been granted.

5.11 GRANT MADE WHEN JUPITER WAS IN AQUARIUS (KUMBHA):

Minchirai - Matam copper plates belong to 13th century A.D. refers to the grant of 67 achchu for feeding persons on dvadasi days of the 12 months of the year. This is said to have been engraved on a copper plate in the month of Tula of the year in which Jupiter was in Kumbha.[29]

In a record of Bhaskararavivarman dated in his 2+29th year from Tirukkakarai, it is stated that in the month of Makara when Jupiter was in Kumbha one Kodai Narayan of Serumarrappulai made a gift of 60 *kalanju* of gold to the temple of Tirukkakarai Bhatarar for burning lamps.[30]

Another Tirukkakarai inscription records the gift of gold by one Kanda Narayanan of Makkandarpalli in the month of Makara, when Jupiter stood in the Kumbha rasi in the nineteenth year opposite to the second year of king Bhaskara Ravivarma Tiruvadi.[31]

5.12 GRANT MADE WHEN JUPITER WAS IN THE PISCES (MINA RASI):

The Tirukkakkarai inscription of Bhaskara Ravivarman dated in the year opposite to the year forty and odd states that when Jupiter was in Mina rasi, one Govindan Kunrappolan of Kuvalayini donated gold to the temple on the occasion of Puradam festival and Onam festival.[32] The inscription of ViraRavivarman dated in the Kollam year 782+824= 1606 A.D., on Thursday, the 22nd of the month of Aipasi, the tithi of the bright fortnight, Anusha nakshatra, and Vrischika rasi, the Srivimana was caused to have been reconstructed and the kumbhabhisheka ceremony was performed on Friday, the Jyoti nakshatra, on the 6th of the month of Chittirai corresponding with the first tithi of the dark fortnight, Karkataka rasi , when Jupiter stood in the Mina**,** and Saturn in Dhanus, in the Kali year 4708.

It is interesting to note from a record from Tirukkakkarai dated in the month of Mesha of the 5th year opposite to the 5th year of the reign of king Indesvarankodai states that the king ascended the throne in 955 A.D., when Jupiter was in Mina rasi. It registers the assignment of the revenues from the lands by way of proprietor's share for burning two perpetual lamps and for feeding the Vedic Scholars in the temple of Tirukkakkarai-Bhatarar.[33]

5.13 CONCLUSION:

In Kerala, it may be pointed out that the rulers gave more importance to the Jupiter's movement. Grants have been made in Kerala during the period of Jupiter's movement due to rain for seven months.

NOTES AND REFERENCES:

[1] *TAS, Vol II, p.153*

[2] *TAS , Vol III: No 44, p.184*

[3] *Ibid., Vol III: No 42, p.179*

[4] *Ibid., Vol III No : 28 p : 76*

[5] *TAS, Vol II p.46*

[6] *TAS, Vol III, No: 18, p.57*

[7] *TAS, Vol II section 8,p.146*

[8] *TAS, Vol III :No 47 p. 188*

[9] *Ibid., Vol III: No: 50,p.196*

[10] *Ibid., Vol III: No: 6,p.28*

[11] *Ibid., Vol III: No 62,p.223*

[12] *Ibid., Vol II: No: M, p.48*

[13] *Ibid., Vol III: No:35,p.166*

[14] *Ibid,. Vol III: No: 40,p.176*

[15] *Ibid., Vol III: No 60,p.60*

[16] *Ibid., Vol II : sec 3,p.140*

[17] *Ibid., Vol III: No: 45,p.185*

[18] *Ibid., Vol III: NO 29,p.77*

[19] *Ibid., Vol III: No(1), p.1*

[20] *Ibid., Vol II: NO 5,p.26*

[21] *Ibid., Vol II: 7(J),p.45*

[22] *TAS Vol III,No.1.A.,p.18*

[23] *Ibid., Vol II: No;4,p.22*

[24] *Ibid., Vol III: No: XII,p.44*

[25] *Ibid., Vol III: No;19, p.59*

[26] *Ibid., Vol III,A,p.21*

[27] *Ibid., Vol II: No: 4,p.24;Vol III,p.39*

[28] *Ibid., Vol III: No 4,p.26*

[29] *Ibid., Vol III: No: 57,p.207*

[30] *Ibid., Vol III: NO 43,p.183*

[31] *Ibid., Vol II: 7(G),p.41*

[32] *Ibid., Vol II: No:L,p.46*

[33] *Ibid., Vol III:No:36,p.170*

CHAPTER-6

FESTIVALS RECKONED WITH RESPECT TO THE PHASES OF THE MOON

We come across a number of references for the conduct of festivals in the temples. These festivals are in accordance with the movement of the Sun and the phases of the moon, also the movement of Jupiter etc. Indians use luni-solar calendar having 12 months. Generally, a month consists of 30 days. They have been calculated according to the month in which the festival occurs.

A few instances may be cited to illustrate the above points.

6.1 CHITTIRA FESTIVAL:

Chittira festival is an Indian festival celebrated by Hindus, especially Tamils. It is observed on the day of the full moon in the month of Chittirai or Chaitra, corresponding in the Gregorian calendar equivalent to mid- April to mid-May. In the Tamil calendar, Chittirai begins with the Sun's entry into Aries in mid –April, and is the first month of the year. Chaitra is considered to be a very auspicious month.

A record from Cuddapah district states that on Chittirai-vishu day corresponding to Saka 1131(= 1209 A.D.,) March 24, the gift of money was made by Madhurantaka-Pottappi-Chola Tirukkalattideva for a perpetual lamp in the temple of Sokkapperumal at Nirandanur –agaram.[1]

A record from Pudukkottai dated saka 1057 = 1135 A.D. in the 14th year of Tribhuvanachakravarti Vikrama Chola of the Chola dynasty mentions the grant of lands to a dancing girl for performing *Santi kuttu (a type of dance)* during the Chittirai festival before god.[2]

A record from Kargudi, Namakkal Taluk, Salem district dated in Saka 1240 (=1318 A.D.,) belonging to the reign period of Jatavarman Vira -Pandya, mentions the gift of lands as iraiyili (exemptions of taxes) to the temple, of Kailasam-udaiya-nayanar for the purpose of daily worship, food –offerings and decoration to the god during the festival in the month of Chittirai.[3]

An inscription of Parantaka II Sundara- Chola from Chidambaram states that an endowment of 2 plots of land, by Adittan Kodaippirattiyar, the queen of Arinjigai-Panmar, for providing for the sacred bath of the god on the day of Vishu in the month of Chittirai. [4]

6.2 VAIKASI:

In Tamilnadu, Vaikasi represents the second month of the Tamil Solar calendar. The name of the month is derived from the position of the moon near the star Vishakha on full moon day. Gregorian calendar equivalent is mid-May to mid – June for Vaikasi.

An inscription from Pudukkottai dated in the 24th year of Sri Rajaraja Devar- Rajakesari Rajaraja when the moon was in conjunction with the asterism of Tiruvonam (Sravanam), corresponding to 1239-40 A.D., 19th of May, in the month of Vaikasi, states that the royal order was issued for the exemption of taxes on lands.[5]

6.3 AVANI FESTIVAL:

The fifth Tamil Solar month is an auspicious month for celebrations of festivals. Avani Masam begins on August 15 and ends on September 15. Simha sankramanam or Sun's transition to Leo zodiac marks the beginning of Avani masam. It is also known as Simha masam in solar calendar.

A record of Maravarman Sundarapandya I dated in his 17th year (1233 A.D.) from Kudumiyanmalai mentions the gift of tax free *devadana* land with a tank to the temple of Tirunalakkunramudaiya-nayanar by Sara Araiyan Terran Araisarkalanjappirandan alias Kadambarayan, for the expenses to be met with during the Simha (Avani)-festival, instituted by Sankaran Kandan.[6]

6.4 PURATTASI and AIPPASI FESTIVAL:

Purattasi is the sixth month in the Tamil calendar which occurring approximately between September 15th to October 15th. Aippasi is seventh month in the Tamil calendar from the middle of October to November around 15th. Aippasi begin with the Suns entry into Libra (Tula rasi).When the moon is in the constellation of Ashvini Nakshatra on the full moon day that month is denoted as Aippasi masam. Tula means balance. The duration of day and night will be at equal, during this month, hence it is named as Tula maasa.

An inscription of Rajendra –Chola I from Madhurantakam dated Saka 928 (= 1016 A.D) records the rearrangement of the expenses for the celebration on new moon days (amavasya) to the deities at Tirumukkudal by the assembly of Madhurantakach-chaturvedimangalam, provision of paddy by the urar for Purattasi festival, 150 kadi of paddy by Rajaraja Vaidyamarayan for Aippasi festival and 120 kadi by the Urar of Vaippur out of the yield from the lands was assigned.[7]

6.5 ARUDRA FESTIVAL:

Arudra festival conducted in all Siva temples. It occurs during the Tamil month of Margali or Dhanur month i.e mid- December to mid- January as per the Gregorian calendar when the moon is in Thiruvadirai star and this is also the longest night of the year. The word Arudra is the star Thiruvadirai in Tamil implies a ‘sacred big wave’. This festival is celebrated throughout the Tamil country in a preponderate way and with pomp and glory.

A record from Pudukkottai mentions the gift of rice by one Kodai Mayindan for feeding 110 Vedic Scholars during Thiruvadirai (Arudra) festival of Tirukkunrakkudidevar. Another Pallava Ko-nandippottaraiyar record (9th century A.D.) in the Parvatagirisvara temple mentions the gift of 200 nali of rice by a native of Vaduvur in Mipulai nadu for feeding 100 persons on the day of Thiruvadirai (Arudra).

A record dated in the 5th year of Rajadhi raja (1167-68 A.D) from Tiruvengaivasal mentions the gift of land by Sadiran Irasan for performing six *santi*

kuttu (a type of dance) during Tiruvadirai (Arudra) festival instituted by him in the month of Vaikasi by Umaiyalviyar and others to the god Sadiravitanga nayakar .[8]

6.6 MASI FESTIVAL:

Masi is the Tamil month occurring approximately during February15th to March15th. The Masi magam festival is celebrated when there is a lunar conjunction with the asterism of magha nakshatra in Simha sign in the month of masi. In fact the masi magam festival is celebrated once in 12 years according ti the tradition in Tamilnadu. The Magam star in the Masi month usually falls on the full moon day and is considered highly auspicious in many temples across south India, especially in Tamilnadu.

An inscription from Nirpalani in Kulattur Taluk belonging to Chola king Kulottunga III and dated Saka 1070(=1084 A.D.,)mentions the gift of 160 *kasu* for conducting the procession of the deity on the occasion of Masi festival.[9]

Inscription from Pudukkottai belonging to king Parakesarivarman mentions the gift of gold by Sattam-padari to the Mahadeva of the Tirumerrali (Melaikkovil) at Tirunalakkunram for Salaiyuttu (feeding on the road) during the Masi magam. It is interesting to find the offering of food to the deity when the idol was taken procession during a festival.[10]

6.7 PANGUNI UTTIRAM FESTIVAL:

Uttiram is a star in the constellation Virgo (Kanya rasi). During the Tamil month of Panguni, sun will be in the sign Pisces (mina rasi). Panguni Uttiram is a day of importance to Tamil Hindus. It falls on the day the moon transits in the asterism or nakshatram of Uttara-phalguni or Uttiram in the twelfth month of the Tamil solar calendar i.e. Panguni (March-April).It is the full moon of the month of Panguni.

A record of Chola Parakesarivarman dated 920 A.D., from Gokarnesvara temple at Tirugokarnam mentions the gift made for conducting the festival Panguni Uttiram to god Ganavatiyar. [11]

An inscription from Kudimiyanmalai dated in the 22nd year (929 A.D.) of Parakesari mentions the gift of 15 *ma* of gold, for feeding daily 20 Vedic Scholars for seven days during the Panguni Uttiram festival.[12]

6.8 RATHASAPTAMI:

Ratha Saptami or Rathasaptami is a Hindu festival that falls on the seventh day (saptami) in the bright half of the Hindu month Magha. Ratha saptami is a symbolic of the change of season to spring and the start of the harvesting season. It is also said that sage Bhisma breathed his last breath fourth day after the Rathasaptami day on ekadasi.

A record belonging to the period of Vijayanagara king Krishnadevaraya registers a renewal of the gift of the village Kalavur renamed as Krishnapura in Hoysala -desa by Saluva Govindarajayya in the presence of god Virupaksha in the pampakshetra, i.e.Humpe. It is dated Saka 1443, Vikrama, Rathasaptami, Magha, su.7, corresponding to 1521 A.D., January 15.[13]

6.9 KRISHNASHTAMI:

Krishnashtami or Krishna Janmashtami also known as Gokulashtami is an annual Hindu festival that celebrates the birth of Krishna. It is observed according to Hindu luni-solar calendar, on the eighth day (Astami) of the Krishna Paksha (dark fortnight) in the month of Sravana (Avani) of the Hindu calendar, which overlaps with August and September of the Gregorian calendar.

A Sanskrit record registers a gift of the village Daliga,in Maisuru-Sthala,to Lakshmi-kanta ,a residence of Mayisur-pura,to the south of Kaveri and north of

Kapila, in the presence of god Ranganatha, by Simha-bhupati.The details of the date Saka 1421,Siddharthi,Sravana,ba.8,(Krishnashtami) corresponding to 1499 A.D., July 30.[14]

6.10 RAMANAVAMI:

Rama Navami is a spring Hindu festival that celebrates the birth star of god Rama. The festival is a part of the spring Navratri, and falls on the ninth day of the bright half (Sukla paksha) in the Hindu calendar month of Chaitra. This typically occurs in the Gregorian months of March or April every year.

A record from Srirangam registers the gift of the village Kadambankurichchi in Kilnagu-nadu included in Rajarajapurachchavadi for daily offerings of curd-rice (dadhyodana) to god Ranganatha during the Sri-Ramanavami festival.

A copper plate charter of Ramaraya, the chief of Aravidu refers to the grant of six villages, in the presence of the god Rama-vithala at the time of the abhisheka or anointment of god Rama. The date of the record is Saka 1435=1513 A.D., corresponding to 15th April, expressed by the chronogram *bana-pavaka-veda-indu,* Srimukha, Ramanavami day corresponds to Tuesday.[15]

An inscription from Oragadam in Chingleput district records the endowment of one fourth of the share of the land at Uragadam alias Sri-Parankusapuram, for the celebration of the Sri-Ramanavami festival for the god Raghunatha-pperumal by Nallarayan.[16]

A record belongs to the reign of Chinna Chavappa younger brother of Chavappa, took up his residence at Dakshina-Dvaraka (Mannargudi) and became a great devotee of god Krishna of that place on the Ramanavami day of the year Ananda,in Saka 1536,expressed by the chronogram *ritu-agni-bana-bhu*, corresponding to 9th march,1614 A.D., in the presence of Rama-vyasa, at the time of anointment of god Rama, the chief made a grant to Vijayindra-yatindra. It is evident from the above records that the cult of Rama worship was quite popular in Andhra and Tamilnadu regions as early as the 15th century A.D.[17]

6.11 EKADASI:

Ekadasi is the eleventh lunar day (tithi) of each of the two lunar phases which occur in a Hindu calendar month –the Sukla Paksha (the waxing phase) and the Krishna Paksha (the waning phase).

A record from Attur in Salem district seems to refer to the grant of land to a Brahmin with the privilege to appropriate some local miscellaneous levies, and to enjoy the eight kinds of rights in respect of that land ashta bhoga tejasvamya, on the occasion of ekadasi, for the merit of the king Krishnaraya-maharayar. The details of date are Saka 1449, Virodhi, Simha, su.11, Sunday, Pushya, which seems to correspond to 1527 A.D.[18]

6.12 UTTANA-EKADASI:

Uttana ekadasi occurs during the shukla paksha (bright fortnight) of the sacred month of kartika (October-November), it is the second Ekadasi of the month.

An inscription from Tamilnadu refers to the rule of Hoysala Vishnuvardhana, and records the grant of the village Tanchanur in Vadakarai-nadu to god Singap-perumal Narasimha of Jati-grama. The details of date in the cyclic year Vibhava, Karttigai, su.11 (Uttana-ekadasi), Friday, Revati-nakshatra seems to correspond to Saka 1070 equivalent to 1148 A.D., October 25, Monday.[19]

6.13 UTHANA DVADASI:

Dvadasi is the twelth lunar day (tithi) of shukla (bright) or Krishna(dark) fortnight of every lunar month in the Hindu calendar. Uttana dvadasi is celebrated in the Vishnu temples probably during the period of Dakshinayana. A record from Srirangam dated the Saka year expressed by the chronogram *Rajyaloke* (1312) and the other details, Pramoda, Karttika, Uttana dvadasi corresponding to 1390 A.D., October

21, records the gift of 30 cows for a perpetual lamp by Annappa-Udaiyar-Chyaunlappa.[20]

Three copper plate records in Nagari characters dated Saka 1319 expressed by the chronogram *nidhi-chandra-agni-vidu*, refers to the Uttana dvadasi and registers the grant of the village Hennuge (Hemmuge) renamed as Harihararajendrapura by the king to Varada-bhatta. The details of date Saka 1319, Isvara, Karttika, su.12.The tithi correspond to 1397 A.D., November 2.[21]

There are two records of Krishnadevaraya from Nagalapuram in Chingleput dated Saka 1436, Bhava, Karttika, Uttana-dvadasi, Friday, Revati, correspond to 1514 A.D., October 30, Monday and Saka 1445, Subhanu, Karttika, Su.12, Monday. The details may correspond to 1523A.D. November 19, they refer to the gift of a village called Devarayakuppam named as Krishnarayapuram in Narayanapurapparru to god Kariyamanikka perumal in Arigandapuram and the village Harigandapuram renamed Sri Nagalapuram to god Nilamanikkadeva for food offerings, dance, music, and musical instruments by the brother of Vadamallannan respectively during Uttana dvadasi. [22]

A record from Kumbakonam in Tanjavur district registers the remission of some taxes by king Krishnadevaraya in favour of god Svaminatha. The details of the date Saka 1436, Bhava, Tula, su, Uttana-dvadasi, Monday, Revati corresponds to 1514 A.D., October 30.[23]

6.14 SIVARATRI:

Maha Sivaratri is a Hindu festival celebrated annually in honour of the god Shiva. There is a Shivaratri in every luni-solar month of the Hindu calendar, on the month's 13th night or 14th day, but once a year in late winter (February/March, or Phalguna) and before the arrival of spring, marks Maha Sivaratri which means "the great Night of Shiva".

A record from Tiruppalaippandal in Cuddalore district dated 1217 A.D., registers an agreement given to Viranam-udaiyan Tirukkatturaiyudaiyan alias Alangarappiriyan, by three Siavabrahmans who were in the enjoyment of Kani in the temple of god Tirunagisvaram-udaiya narayanar at Tiruppalaippandal to supply the necessary articles for the worship of the god on Sivaratri day in the month of Masi.[24]

The Solamadevi inscription dated Saka 1198 (= 1276 A.D.,) states that a certain Vellatti named Urankovi alias Kalabha-manachchay donated 5 Palanjalagai achchu to provide for the services on Sivaratri days to the god Kulasekhara-Isvaramudaiyar of Solamadevinallur.[25]

A record from Mavanur states that Devavve, wife of Apparasaiyya set up a linga, named Mallesvara and for maintaining the services of gods Appesvara. This record is dated Saka 1204, Vishu, Magha.ba.14, Sunday, Sivaratri corresponding to 1282 A.D., February 8.The Saka year was current.[26]

A record refers to the rule of Hoysala Viraballala III and registers the grant of the village Narasimhamangala with all its revenues for the services of god Ramanatha of the place. The record is dated in Saka 1258, Dhatu, Magha, ba.14, Thursday, Sivaratri; correspond to 30th January, 1337 A.D.[27]

An inscription from Aduturai in Tiruchirappalli district belonging to the reign period of the king Devaraya-maharaya made a grant of the village to god Tirukkurangaduturai-udaiyar-kurram-poruttaruliya-nayanar. It mentions Sivaratri-punyakalam, in this connection but apparently this auspicious occasion had no link with the date of the record, as even the monthly Sivaratri (the fourteenth day of the dark fortnight) in the month of Makara can never coincide with the asterism Svati and the Mahasivaratri is observed only on the lunar month Magha. So the record seems to have been officially issued earlier to meet the delays in the process of giving effect to the order.[28]

A Sanskrit record refers to the rule of Vira Narasimha of the Tuluva dynasty of Vijayanagara and is dated Saka 1383, Chitrabhanu, Magha,ba.14,Sunday Sravana-nakshatra, the auspicious day of Sivaratri. These details correspond to 1463 A.D.,

February 17, Thursday, Dhanishta-nakshatra. It registers a gift of the village Kaigondapalli alias Viranarasimhapura,in Sindhughatta-sime, of Hoyisala-desa to Nanje-habbaruva of Atri-gotra and Drahyayana-sutra, by the king on the occasion of his performing Saptasagaradana in the presence of god Siva at Srisaila.[29]

A record from Vedaranyam in Tanjore district records the sale of 5 veli of land for 200 panam by the Adichandesvara-devakanmis of the Tirumaraikkadu temple to Velar, who made a gift of it to god Tambiranar of the same temple for conducting the Sivaratri festival. The details of the date Saka 1386,Tarana,Tai,10 correspond to 1465 A.D., January 5.[30]

A record from Kudagu-nadu registers the grant of the village Madihalli in the presence of god Somesvara of Sivanasamudra. On Sivaratri day the gift was made in the year Nala, ba.14, corresponding to 1496 A.D., February 1.[31]

In the Nanjanagud inscription there is a reference to the grant of the villages Bovanahalli and Volehalli together with all local customs for the offerings to the god Nanjundesvara for the merit of Tirumalaraya-maharaya. The details of the date Saka 1451, Sarvadhari, Magha ba.14, Sivaratri, Sunday correspond to February 7, 1529 A.D.[32]

A Vijayanagara record registers the gift of the village Komrakere in the presence of god Virupaksha.The details of date Saka 1464, expressed by the chronogram *abdhi-anga-amnaya-sitamsu*, Subhakrit, Magha, ba.14, Sivaratri day, Friday corresponding to 1543 A.D., February 2.[33]

In a record dated Saka 1483, corresponding to 1561 A.D.,) from Srigiri. It is stated that a grant of land in the village Miruturu in Kamnadu-sima to Chenna Mallikarjuna of Srigiri was made for the maintenance of a feeding house for pilgrims during Sivaratri.

A record from Yedatadi in South Kanara district registers a gift of land to a matha and the deity Umamahesvara installed therein by Bamchanna Heggade alias Kota Adi of Yedatadi, The details of date Saka 1487, Raktakshi, Phalguna ba.14,Monday,Sivaratri, corresponds to 1565 A.D. March 1 when the weekday was

Thursday. The Sivaratri occurred on Magha ba.14 which tithi fell on Wednesday, January 31 of that year.[34]

Another copper plate record of Srirangaraya I registers the grant of five villages to Sudhindra-tirtha for worship and offerings to god Ramachandra and for feeding (annadana) in the matha. The record is also dated Saka 1497, expressed by the chronogram *asva-ratna-payobdhi-indu* Yuva, Magha. ba.13, Sivaratri day, corresponding to Saturday 28, January, 1576 A.D.[35]

The Dalavay Agrahara plates of Varatungarama Pandya states that the village of Muruganeri was granted in the presence of Vamadeva, in the temple of Karamarddanathasvamin, to Chandrasekhara. The details of the date Saka 1504, expressed by the chronogram Bhanurmanya, wednesday, the Chaturdasi of the dark fortnight of the month Magha of the year Chitrabhanu, in the Uttarayana, Sasi-ritu, in the Sravana nakshatra, Bhadra-karana and Siddhiyoga, on the auspicious day of Sivaratri.[36]

6.16. CONCLUSION:

Festivals are an important part of our life. Most of the festivals in India are associated with phases of the moon, stars, and months. Special offerings are to be made on the occasion of the festivals in the months of Aipasi, Masi, Karttigai as well as for the hunting festival and Janmashtami (the birth day of Krishna) and the king's birth day anniversary. The festivals recorded in epigraphs also exhibit the national integration.

NOTES AND REFERENCES:

[1] *SII., Vol XXIII, NO :582*

[2] *IPS., No:128*

[3] *Ibid., Vol XXVIII, NO 38*

[4] *Ibid., Vol , NO 225*

[5] *IPS., No :196*

[6] *IPS., No: 304*

[7] *SII., Vol XXX: NO: 98*

[8] *IPS.,No: 139*

[9] *IPS.,No: 216*

[10] *IPS., No:77*

[11] *IPS., No; 54s*

[12] *IPS., No: 67*

[13] *Ep. Carn; VOL 5, p. 604*

[14] *Ibid., Vol 5 : p. 176*

[15] *Ibid .,Vol 3, p. 203 No: 113*

[16] *SII., Vol XXIII , No: 95*

[17] *Ep. Carn; Vol 3, p. 223, No: 117*

[18] *SII., Vol XXVIII, No :250*

[19] *Ep. Carn: VOL 7: PAGE 383*

[20] *SII., Vol XXIV; No: 302*

[21] *Ep. Carn: Vol 5, p. 634*

[22] *SII., Vol: XVII , No: 677, 683*

[23] *Ibid., Vol: XXIII, No: 496*

[24] *Ibid., Vol XVII, No: 178*

[25] *Ibid., Vol XXVI, No: 247*

[26] *Ep. Carn: Vol 8*

[27] *Ibid., Vol 4: p. 688*

[28] *SII .,Vol XXVIII, No: 26*

[29] *Ep. Carn: Vol 6, p. 52*

[30] *SII .,Vol XVII, No: 531*

[31] *Ep. Carn: Vol 3, p. 132*

[32] *Ibid., Vol 3 :,No: 93*

[33] *Ibid., Vol 3, p. 211*

[34] *SII., Vol XXVII, No : 198*

[35] *Ep. Carn: Vol 3, p. 200*

[36] *TAS Vol I: No:XI, p. 177*

CHAPTER- 7

ASTRONOMICAL DETAILS FIGURING IN INSCRIPTIONS AND CODING THEORY AND KATAPAYATI CODE

7.1. ASTRONOMICAL DETAILS FIGURING IN INSCRIPTIONS:

Both inscriptions and literature furnish astronomical details which are relevant for the reconstruction of the history. The chronology of the Cholas and Pandyas has been worked out with the help of the Mathematical reconstruction from the details given in the record. The investigations of the astronomical details given in the epigraphs are more valuable. Reconstruction of the dates of the early Chola kings as well as the Pandya kings is not so easy. Most of their inscriptions contain astronomical data. However, they create serious difficulties while identifying the rulers and fixing the chronology.

In the case of early Chola kings, the rulers are introduced with their titles like Parakesari and Rajakesari. Scholars have suggested different dates for each of the Chola rulers. The accession dates of Gandaraditya, Sundarachola, Arinjaya and Aditya II Karikala have been tentatively given on the basis of the historical event. Similarly fixing the date of Parakesari Uttama Chola poses problems. It was at this juncture scholars like Kielhorn, K.V. Subramanian Iyer, Sethuraman and others have examined the astronomical details given in the records.

7.2 FIXING THE DATES OF KINGS:[1]

It is only the astronomical data which helps one to find the accession date of the ruling kings. A number of instances may be cited to prove that the astronomical data are very important in fixing the dates of the rulers particularly while fixing the dates of Parakesari Parantaka Chola I. It is the Anaimalai record that has helped to solve the issue. The details namely year 3, month Karkataka, Solar eclipse, Friday,

Asleshsha nakshatra exactly correspond to 19th July 939 A.D., Therefore Asleshsha in Karkataka month of 907 A.D., falls in the Ist year, the star was current on 12th July.

In the case of the accession date of Uttama Chola there was a problem as whether to accept the Kali Yuga year 4083 quoted in the Thiruvidaimarudur record or 4080 quoted in the Uyyakondan record as correct. A recently discovered inscription from Kumbhakonam furnishes the astronomical details that have come to our rescue to solve the problem. The details given are regnal year 10, Month Mesha, Thursday, Bharani nakshatra and solar eclipse.

On the grounds of paleography the record can be assigned to 10th century. The details of astronomical data perfectly correspond to Thursday the 7th April 981 A.D., the Solar eclipse occurred between 11.15 A.M and 2 P.M. A Solar eclipse of this type with the combination of Mesha, Thursday and Barani nakshatra occurs rarely

As per the Kumbhakonam record, Uttama Chola came to the throne after April 9, 971 A.D., corresponding to Kali Yuga year 4072 expired. This information solves the dialogue of the Thiruvidaimarudur record in which the quoted Kali Yuga year 4083 was found as expired year equivalent to 982-83 A.D.,

Again in the case of Parakesari Arinjaya Chola the astronomical details are helpful to fix the date of his reign period. A record from Nagesvara temple at Kumbhakonam gives the regnal year 6, Month Ani, full moon day, Mula nakshatra, Friday. The data in the poetical form repeat the occurrence of full moon four times. The data exactly correspond to 4th June 958 A.D., the full moon was current upto 2 P.M. The Mula nakshatra was current upto 7.45 P.M, Mula in Ani of 958 A.D., falls in the 6th year .Therefore the Mula in Ani of 953 A.D., falls in the first year. This gives us a clue to fix the initial date of Arinjaya as 953 A.D., 31st May.

For fixing the date of Aditya II, the astronomical data given in the Udaiyalpuram record comes to our rescue. The dates given are year 3, Kanni, Uttirattadi and Tuesday. These details correspond to 16th September 962 A.D., Accordingly Uttirattadi in Kanni of 960 falls in first year, and the star Uttarabhadrapada was current on 8th September.

The early Pandya records mention the king's name along with the title Maranjadaiyan or Sadaiyamaran gives the astronomical details. These records are helpful for fixing the exact reign period of these kings. One of the important inscriptions of this period is the Sanskrit inscription from Anaimalai in Madurai district. This record gives the Kali year 3871 Karttika, Sunday corresponding to 770 A.D., It helps us to fix the date of Pandya Parantaka Sadaiyan in whose reign period, and the record is engraved. Another important chronological landmark is given in the Aiyampalayam inscription of Varaguna Pandya. It gives the Saka year 792 combined with the regnal year 8 .This furnishes the initial year of the king as 862 A.D., Therefore the ruling king may be identified with Varaguna II.

Again in fixing the date of Varaguna, the astronomical details given in the Tiruvellarai record are 4+9th year of Maran Sadaiyan and other details such as Vrischika, Monday, .Asvati nakshtra.These details correspond to 824 A.D., November 7. The king of this record has been identified by scholars as Varaguna I. These astronomical details also gives us the equivalent date of 874 A.D., November 22nd and thus the king has been identified as Varaguna II of accession 862 A.D., The astronomical details given in the Lalgudi record of MaranSadaiyan alias Varaguna correspond to 824 A.D., November 29.This inscription is dated in the year 4+9th of the king's reign, the other details of date being Dhanus, Sadayam and Tuesday. There is a debate that the above details of date fall both in the reign period of Varaguna I and II.[2] The equivalent date for the astronomical details given in the Lalgudi record corresponds to 875 A.D., December 9th.

It must be noted that the Saka year 792 and regnal year 8 given in the Aiyampalayam record and the astronomical details given in the Anaimalai inscription which is dated in the Kali era are two important landmarks .The early pandian chronology on the basis of these two epigraphs enable us to fix the date of Varaguna I I as 862 A.D., In this way the astronomical details are very useful to fix the dates of the ruling kings and to know the reasons for giving grants on auspicious occasions.

For the reckoning of the date of Jatavarman Srivallabha Pandya the astronomical details given in the inscriptions gives the exact date in which he

ascended the throne. The Vijayanarayanam record of Srivallabha contains his prasasti "Tirumadandaiyum Jayamadandaiyum" etc., It is dated in the year 10, Month being Tula.

A record from Tenkarai is dated in the 21st year of Srivallabha. It contains his prasasti. The available data are month Makara, Solar day 2, Friday and Uttirattadi. The data do not provide a date between 1100 and 1200.However the author of the Pandya volume Sri A.S.Ramanatha Iyer suggests Friday the 25th December 1142 A.D., and admits that it was Makara 1. The report surmises that the king came to the throne between 1120 and1122 (probably a mistake for 1121-1122). The report admits that this initial date does not agree with the king's two more records which quote the positions of Jupiter. Instead of Tenkarai record it is better to seek other solutions. The record which is dated in the month Tula of the 10th regnal year of Srivallabha states that as per the temple documents, certain lands were granted during the 31st year of Kulottunga I. Thus it is evident that 10th year, month Tula of Srivallabha is later than the 31st year of Kulottunga. (1101 A.D.)

Srivallabha's Ambasamudram record of his 20th year is important from the point of view of entry of Jupiter into Kumbha. It registers the grant made over to the temple and further states that the grant is to be made effective from the date when Jupiter entered Kumbha.

Srivallabha's Rajasingamangalam record contains his Prasasti. The record is dated in his 10th year. The record while mentioning the grant made in the 10th year also refers to an earlier grant made in the year when Jupiter entered Kumbha. It is evident that in some year prior to his 10th year, Jupiter entered Kumbha .Jupiter has 12 year cycle. Naturally in his 8th year, Jupiter should have entered Kumbha. Thus the grant made in the 8th year is referred to.

On the 8thyear Jupiter entered Kumbha

10thyear > 8th year

10thyear > 1100-1101

In the 20th year Jupiter entered Kumbha.

Satisfying the above equations we have two dates for Jupiter in Kumbha (300 to 330 degrees) .The first date was the 320th Solar day of the Solar year Kaliyuga 4208 (1107-1108) when Jupiter entered Kumbha. The data falls on 6th February .The date corresponds to the 8th year.

The second date is the 300th solar day in Kaliyuga 4220 (1119-20) when Jupiter entered Kumbha. The data falls on 18th January when the date corresponds to the 20th year.

8th year = 6th February 1108

10th year Tula = October 1110

20thyear = 18th January 1120

Therefore

October 1100 = Oth year

January 1101 = I st year

February 1101 = I st year

October 1101 = I st year

The above calculations reveal that Jatavarman Srivallabha came to the throne in January 1101. It may be pointed out that Jupiter entered Kumbha (300th degree) on 18th January 1120. It travels 30 degrees and enters Mina (330th degree) in the next year i.e., 1121. It means that commencing from 18th January 1120 Jupiter will be in Kumbha for one year. This is corroborated by Kulottunga I's Tirukkoshtiyur record. The data of the record are year 50, Jupiter in Kumbha, Mesha 26.

On the west wall of the central shrine in the Nagesvarasvamin Temple at Kumbhakonam[3], the importance of the subjoined inscription finds mentioned while the astronomical details of date are given. The record belongs to Parakesarivarman. The other details of date are as follows: Ani month, Full Moon, Star Mulam, Friday.

The phrases are repeated four times. Accordingly the data are year 6, month Ani, Full moon, Friday and star Mula. The data perfectly agree with 4th June 956. Full moon was current up to .34 of the day and star Mula was current upto .58 of the day. The record belongs to Parakesarivarman Arinjaya. Mula in Ani of 958 falls in the 6th year. Therefore Mula in Ani of 953 falls in the first year. It was current on 31st May. Arinjaya came to the throne prior to 31st May 953.

Aditya's records with the title Parakesarivarman, “who took the head of Pandya" or” Vira Pandya" are available. Some of these records contain astronomical data. Three of his Udaiyarkudi records with the title who took the head of Pandya contain astronomical data. They are tabulated below. The Tamil months Kanni, Vrischika and Makara corresponding to September, November and December (or) January falls in the years 3, 4, and 4. It means that they are in the continuous flow of a main current. We have seen that Sundara Chola came to the throne in 957. Therefore Aditya's dates satisfying the astronomical data of his records and the main flow of the currents of the regnal years must fall between 957 and 971 when Uttama Chola came to the throne.

Table 7.1

Aditya's dates satisfying the astronomical data

Record No.	Village	Regnal Year	Astronomical data
588/1920	Udaiyarkudi	3	Kanni, Tuesday and UttiraAshada
619/1920	Udaiyarkudi	4	Vrischika, Wednesday and Sravishta
610/1920	Udaiyarkudi	4	Makara, Monday and Kirtika

7.2.1 ADITYA KARIKALA II ALIAS PARAKESARIVARMAN WHO TOOK THE HEAD OF THE PANDYA

The data of 588/1920 gave some problems. The date in relation to the other two records which supplied the dates in 963 only is not satisfactory. To reconcile with the data of 588/1920, the Udaiyarkudi inscription comes to our rescue. Record number 588/1920 is engraved on the North wall of the central shrine of the Anantisvara Swamy Temple. The star quoted in the inscriptions was Uttirattadi. i.e. Uttra Badrapada. It is not Uttira Ashada as reported in annual report on Indian Epigraphy. This solved the problem and also the problem of Aditya II. The data of the other two records agree with the report. Accordingly the correct dates of the record are worked out below

Record number 588/1920: The correct data are year three and Tuesday. The data perfectly agree with 16 September 962. Accordingly Uttirattathi in Kanni of 960 falls in the first year. The star was current on 8th September.

Record number 619/1920: the data are year 4, Vrischika, Wednesday and Sravishta. The data perfectly agree with 28 October 963. Accordingly Sravishta in Vrischika of 960 falls in the first year. The Star was current on 30 October.

Record number 610/1920: the data are year 4, Makara, Monday and Kirtika. The data perfectly agree with 28 December 963. Accordingly Kirtika in Makara at the end of 959 or beginning of 960 falls in the Oth year. The Star was current on 10 January 960.

As per 610/1920..... 10-1-960 = O th year

As per 588/1920..... 8-9-960 = 1st year

As per 619/1920..... 30-10-960 = 1st year.

Parakesarivarman Aditya Karikala, who took the head of Pandya, ascended the throne between the 11 January and the 8 September 960. It is on this date that the

Chola king Arinjaya died. Thereafter Sundara Chola crowned his son Aditya II in the middle of 960.

Kumbhakonam record number 234A/1911[4] belongs to Parakesarivarman. The data are year 5, month Ani, Full moon, Mula and Friday. The data perfectly agree with 16th June 965. The record belongs to Aditya II. Accordingly Mula in Ani of 960 falls in the O th year. The star was current on 11th June 960.

Parakesarivarman Aditya Karikala II came to the throne between the 12th June and the 8th September 960. The following records belong to the reign period of Aditya II and they bear the definite dates.

Table 7.2

Date of Aditya II

Record no.	Regnal year	Christian date
588/1920	3	16-9-962
619/1920	4	28-10-963
610/1220	4	28-12-963
234A/1911	5	16-6-965

Prof. Sastri states that the astronomical detail of the Udaiyarkudi record supports the view.[5]. It was Sastri who suggested the correct the regnal year as 3. But in "The Colas" he says that the astronomical data agree. For example, instead of correcting the regnal year, we can also quote a suitable date in the 2nd year of Rajaraja. The details of date are year 2, Mesha, Sunday and Purattasi. Here Mesha is a mistake for Mithuna. Accordingly the data agree with 19 June 987. It may be said that Mesha is a mistake for Simha or Kanya. Then we get two dates namely 22

August 986 and 19 September 986 both falling in the second year of Raja raja. Instead of correcting the year, we can correct the month. Sastri corrected the regnal year and suggested a date as 988. In the Udaiyarkudi record the details of the date are year 2, Mesha, Purattasi and Sunday. The date is expected to fall between the 23rd March and the 21st April 987.The star was current on 29th March but it was Tuesday. As far as the Udaiyarkudi record is concerned it is better and justifiable to rely on the regnal year and the month Mesha alone. Accordingly the date of the record is April 987.

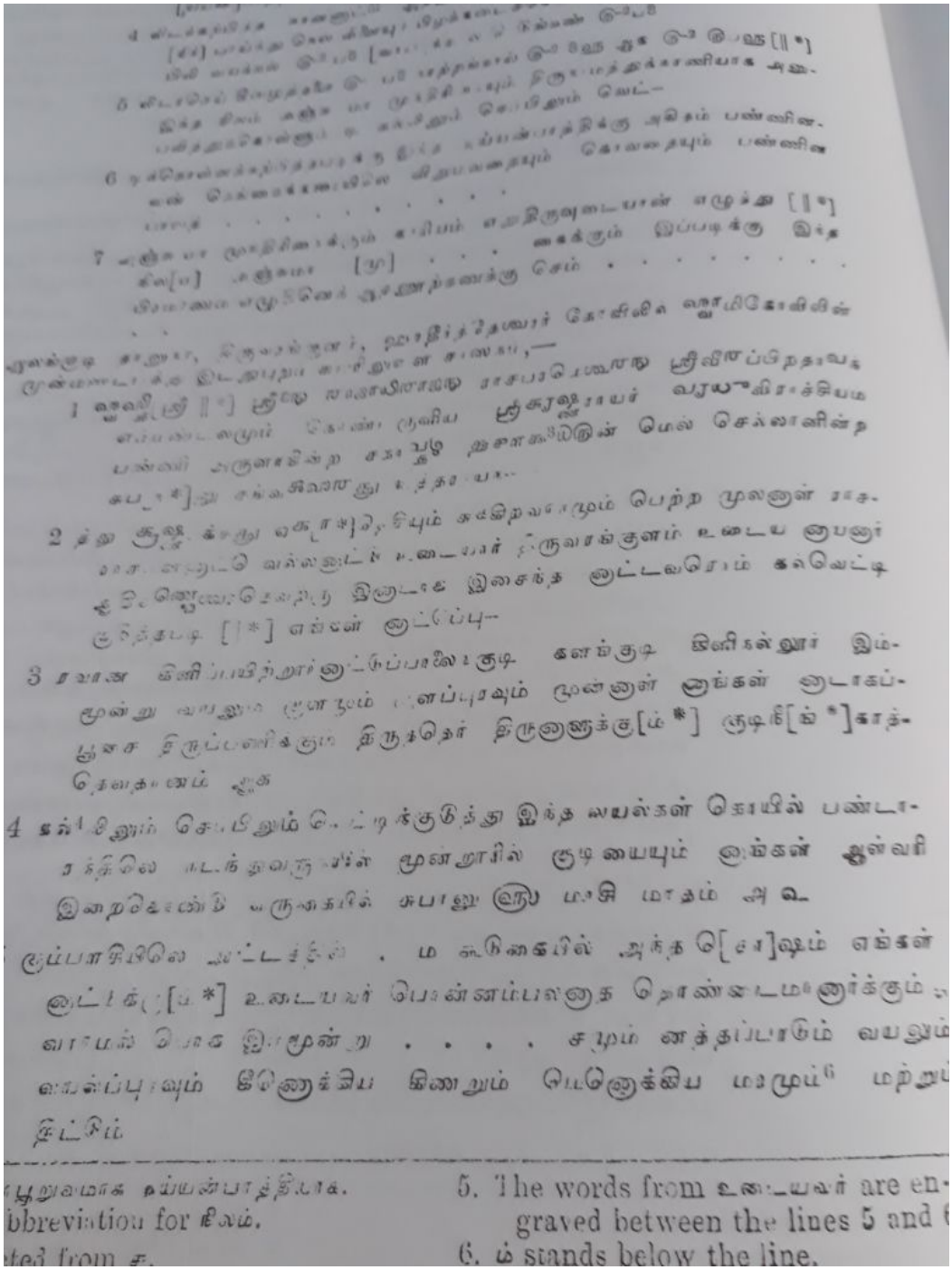
7.3: EFFECTS OF THE PLANETARY COMBINATIONS:

7.3.1 TRANSIT OF MINA SANI (SATURN IN MINA RASI):

Inscriptions refer to the transits of the planets in a particular sign and the configuration of the planets which has resulted in the calamities earthquakes, floods, famine and other resultant occurrences. In particular case the evil effect of the planets has been predicted. For instance a record of Krishnadevaraya dated Saka 1445(1524 A.D) from Tiruvarangulam[6] in Pudukkottai district mention some bad planetary configuration i.e., "*attatti in Kumbha rasi*". Earlier to this incidence there are two instances referring to the occurrences of famine conditions, in all probability during the period of configuration of certain planets. The details of the date are year Subhanu, Krishna paksha, ekadasi, Mula nakshatra, Uttarayana, sukra vara (Friday), masi 8.This is a good example of the evil effects at the time of astronomical occurrences. In order to prevent the evil effect of this configuration the villagers and the tenants prayed to the divine intervention to protect the *nadu* from the evil effects well in advance before the astronomical occurrence. Two more evidences may be quoted here.

Fig-7.1

Tiruvarangulam Inscription of Krishnadevaraya



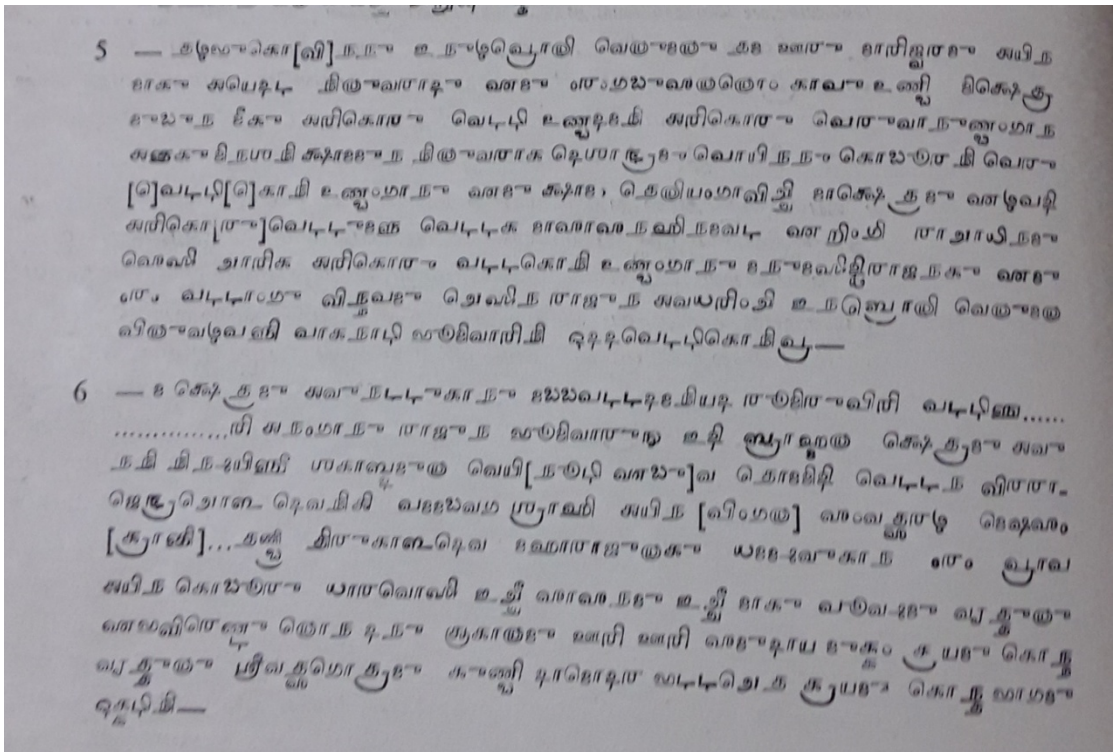
There is an inscription from Tiruppampuram[7] in Thanjavur district. Tamil Nadu dated in the 23rd year (1200-1201 A.D.) of the reign of Chola Kulottunga III refers the steps taken by the king during famine.

The 27th year (1205 A.D.) of the reign of Kulottunga III was the very year in which famine conditions have prevailed in Thanjavur district. It was during the period of movement of Saturn through Pisces a serious famine occurred in the area around Perungandur in Rajampet Taluk in Cuddapah district in Andhra Pradesh[8] and in Tiruppamburam in Nannilam Taluk in Tanjavur district in Tamil Nadu.

A Grantha inscription belonging to the period of Rajendra -Chola III and dated in the 13th year (1257 A.D.) pertains to the occurrence of famine in the Andhra area on account of Mina-sani, (Saturn in the sign Pisces) sometime before the date of the record i.e. before 1256 A.D.

Fig-7.2

A Grantha inscription belonging to the period of Rajendra -Chola III



The area is close to Rajampet Taluk in Cuddapah district, Andhra Pradesh. During a famine that followed the Vedic Scholars left their places and when they returned found them supplanted in their possessions by the new comers who had in

the meantime named their new settlement as Koduru, and refused to give the rent due to their landlords.

This famine had compelled the Vedic Scholars to leave their normal places of residence in the former area and also the cultivator to sell himself and his two daughters to a temple in the latter area. Again during the time of famine many individuals sold themselves to temples to escape from privation and hardship.[9]

It may be argued that Saturn's transit through Pisces could have occurred also in about 1230-1231 A.D.,applying the average of 30 year cycle of Saturn's movement in the Zodiac. Since that is very close to the date 1256-57 A.D., of the Nandaluru record, the emigration of the Vedic Scholars due to famine is recorded as a past event.[10]

7.3.2 EFFECTS OF MARS:

A record of Pandya king Maravarman Virapandya dated in the Saka year 1371 = (1449 A.D) from Viriyachchilai states that Sokka-Narayanan instituted a service in his name for freeing him from the evil influence exerted by the planet Mars which presided at his nativity. As a compensation to get rid of his evil effect he donated lands to the temple of that place.[11]

7.4 VALUES OF ERAS:

It has been mentioned that era is not directly linked with the structure of the calendar for reckoning systematically the days of the months and consequently the year. Nonetheless the era is the very important subject matter in the keeping of calendar because by this system it becomes possible to maintain a chronological record of all past, present and future events which is very essential. Many of the eras have been regnal years and some linked with the founders of religion. Kali era, Kollam era, Salivahana Saka era, the equivalents of different eras are quoted here.

Kali Era - 3101 = A.D. year.

Kollam Era + 824 = A.D. Year,

Salivahana Saka Era + 78 = A.D. year.

7.4.1. KALI ERA:

The reckoning of the Kali-era starts from the 18th February 3102 B.C. The expired Kali year is arrived at by adding 3179 to the expired Saka year .Similarly, we have to add to the years of the Kali era 3044 and 3101 to arrive at the years respectively of the Chaitradi expired Vikrama year and the year of the Christian era .

Kandiyur record gives the day as 1511564th after the beginning of the Kali era which is represented by the chronogram “Vishamampunyamekam”.

va=4, sha = 6, ma = 5, pa = 1,ya = 1, ma = 5, ka = 1.reading the numbers from left to right ,we get 1511564. This when reduced to Kollam andu and A.D. comes to

$$\frac{1511564\times4}{1461} = 4138\ \frac{638}{1461}$$ kali year;

the fraction nay be left off and taking the year to be 4138 its equivalent Kollam Andu will be according to the formula. "¦¸¡øÄò¾ø "¾ÃÇ¡ í¸"ò¨¾ Ü ð Î¸ø ¸Ä¢ÅòŠÃõ" (and ¾ÃÇ¡ í¸õ = 3926) = 4138-3926 =212 M.E. +825 =1037 A.D.

M.E. = Kollam andu. (i.e.) Here 212+3926 = 4138 Kali year.

4138- 3101= 1037 A.D.(i.e.) Kali year – 3101 = Gregorian year:

Christian year – 78 = Saka year (i.e.) 1037-78 = Saka year 959.

7.4.2 KOLLAM ERA:

The Kollam andu was known to the Malayalam-speaking people and in the neighbouring Tamil regions like Tirunelveli and Kanyakumari. The Trivandrum

inscription of Vira-Ravivarman, dated in the current Kali year 4702 and the Kollam year 776 suggest the difference of 3925 years between the 2 eras. According to Kielhorn, we have to add 824-25 to the years of Kollam to get the Christian era. L.D.Swami Kannupillai adds 825 instead of 824-25. In the northern parts of the Kerala or the Malayalam speaking area, the beginning of the Kollam year is counted from the Kanya Sankranthi. i.e., Solar Asvina , while in the Tirunelveli and in the adjoining regions it is counted from the Simha Sankranti i.e.Solar Bhadrapada. The months are named after the rasis (eg. Mesha etc.,) in the North, but are given lunar names after the nakshatras (eg. Chitra etc.,) in the South. The year is solar and is generally regarded as the current.

7.4.3 SAKA ERA:

The earliest epigraphic record that connects this era explicitly with the Saka belongs to the period of the Chalukayas of Badami. The Chalukya inscriptions of the 6^{th} and 7^{th} centuries A.D., use expressions like Saka-varsha and Saka-nripa-rajy-abhiseka-samvatsara. .To get the equivalent in the Christian era, one has to add 78-79 to the years of the Saka era.

7.5 CODING THEORY: [12]

The aim of this chapter is to highlight the various methods of reckonings adopted in the ancient and medieval periods. The code language was ‘Katapayaadi’’. Two more different word numeral codes were known to exist in India apart from Katapayaadi is the Aryabhatta numeral code and Bhuta Sankhya system. In each system of coding, there would be certain rules that need to be followed to code a number into a word.

Inscriptions lend support to understand the system of ancient dating used by the rulers and the people of the South. Though a number of eras have been used in the stone and copper inscriptions, yet the most commonly followed dating especially in

South India are the regnal years, the Kali, Kollam era, The Saka dates, the use of chronograms and the Katapayaadi system. Both in Sanskrit literature and inscriptions, the Katapayaadi system and Chronograms have been frequently mentioned, for they give clinching evidences to date the inscriptions. In order to avoid discrepancies while writing the Arabic numerals in the records, the chronograms have been mainly used. A number of instances can be cited to establish the authenticity of the records with the details of date such as Katapayaadi and chronograms.

7.5.1 KATAPAYAADI SYSTEM:

"Katapayaadi" is an ancient method for memorising oft-used numbers, by converting them into words or word-clusters. Letters in the "ka" and "ta" groups represent the digits from 1 to 9, while in the "pa" group; the first five letters signify numbers 1 to 5. Similarly, letters from "ya" to "la" also signify numbers 1 to 9. In compound letters, the final letter should be taken into consideration. Letters "na", "nja" and the vowels not attached to any consonant too indicate zero (0). Example: ka, kaa, ki, kku, ska = 1 Numbers are reckoned in the reverse order. For example, the numbers for the word "khagam" are 2 and 3, the resultant number will be 32. Again, take "taralaangam":6 2 9 3

The number in the reverse order should be taken, i.e., 3 9 2 6

"kula": 1, 3 -> 31 (u attached to a consonant)
"ula" : 0, 3 -> 30 (u unattached to a consonant = 0)

Since ka, ta, pa, ya stand for 1, the system got the name "katapayaadi". The system came to be used widely in India and particularly in Kerala. As it is easy to indicate numbers like 28 using words like "hari", "dwaaram" and "dukkham", it is used to incorporate numbers into verses. It is also convenient to remember that by subtracting "taralaangam" from the Kali year, the year in Malayalam Era can be calculated. It is more difficult to remember the numbers 3926 than the word it represents, namely, "taralaangam". This system can be used for historical

periodisation. The word in "Naaraayaneeyam" is "aayuraarogyasoukhyam". It is said to indicate the day in the Kali Era on which the composition of the poem was completed. This date can be derived in the following manner:

"aayuraarogyasoukhyam"	aa	yu	raa	ro	gya	sou	khyam
	0	1	2	2	1	7	1
In the reverse order	1	7	1	2	2	1	0

Thus, the day in the Kali era on which the work was completed 1712210

Between Medam and Medam 365 days, 6 hours and 12 minutes

or 365days,61/5hours
or 365 days + (31) / (5 x 24) days
= 365 + (31 / 120) days

Divide the Kali day with this number to get the year in the Kali era:

The year in the Kali era in which the work was completed =1712210/(365+(31/120))

= 4687 years, 244 days

Subtract 3926 from this to get the year in the Malayalam era

Date in Malayalam era =(4867-3926)years,244days =761years,244days or the 244th day in the year 762 in Malayalam era (since year 0 to 1 is counted as 1, and not 0) Starting from the Malayalam month Medam through Tulam, one gets (31+31+32+31+31+30+30) = 216 days (& 244 - 216 = 28) .Medam through Tulam, one gets (31+31+32+31+31+30+30)

This means that the work was completed on the 28th day of the month Vrischikam in the year 762 of the Malayalam era. It is said that the first day in the Kali era was a Friday. So, if the remainder is 1 after dividing the number in Kali era by 7, then it was a Friday. Now, the number 1712210 divided by 7 yields a remainder of 3, and hence the day of the week must have been a Sunday. Therefore, it is clear that the "katapayaadi" system has historical value also.

The reading of the numbers once decoded is done in the reverse order according to the rule mentioned as *ankanam vamatogatih.* This means the numbers are read from right. If this be the case, it would naturally means that the left most syllable will be represented by the number in the right most place.

i. The constants (*vyanjanas)* beginning with k, t and y referred the digits from l (i.e., letters from k to jh, from t to dh denote 1 to 9);
ii. p to m stands for 1 to 5
iii. Letters from y to h represent digits 1 to 8
iv. The nasals n and n denote 0
v. In the case of conjunct consonants, the number denoted only by the last consonant is taken.
vi. The vowels following consonants have no value
vii. The vowels not preceded by their consonants represent 0
viii. The arrangement of the digits is from right to left ankanam vamato gatih
ix. The letters 1, peculiar to the Dravidian languages, represent 9.

The rule is " kadi nava, tadi nava, padi panchaka, yadyastaka"

1) Kadi nava means ka and the following eight letters
2) Tadi nava means ta and the following eight letters
3) Padi panchaka means pa and the following four letters
4) Yadyastaka means ya and the following seven letters
5) Ksha means zero. To make this more clear and understandable the notation is given by the following table:

The assignments of letters to the numerals are as per the following arrangement.

a. The vowels are not included in the list.

b. They are exempted because only the consonants with vowels are assigned numbers.

c. In conjunct consonants, the last consonant alone is to be coded.

The assignments of letters to the numerals are as per the following arrangement

Table

1	2	3	4	5	6	7	8	9	0
ka क	*kha* ख	*ga* ग	*gha* घ	*nga* ङ	*ca* च	*cha* छ	*ja* ज	*jha* झ	*nya* ञ
□*a* ट	□*ha* ठ	□*a* ड	□*ha* ढ	□*a* ण	*ta* त	*tha* थ	*da* द	*Dha* ध	*na* न
pa प	*pha* फ	*ba* ब	*bha* भ	*ma* म	-	-	-	-	-
ya य	*ra* र	*la* ल	*va* व	*śha* श	*sha* ष	*sa* स	*ha* ह	-	-
ka क	*kha* ख	*ga* ग	*gha* घ	*nga* ङ	*ca* च	*cha* छ	*ja* ज	*jha* झ	*nya* ञ
□*a* ट	□*ha* ठ	□*a* ड	□*ha* ढ	□*a* ण	*ta* त	*tha* थ	*da* द	*dha* ध	*na* न
	pa प	*pha* फ	*ba* ब	*bha* भ	*ma* म	-	-	-	-
	ya य	*ra* र	*la* ल	*va* व	*śha* श	*sha* ष	*sa* स	*ha* ह	-

For example:

The Kandiyur inscription of Kodaivarman is dated in the 1511564th day of the Kaliyuga era is expressed in the katapayaadi chronogram “vishamam punyamekam”.

va=4, sha = 6, ma = 5, pa = 1,ya = 1, ma = 5, ka = 1.reading the numbers from left to right ,we get 1511564.

1. In Srirangam inscriptions, the deity Ranganatha has been provided with a village by the chief Ramaraja Sadasivamaharaja on the day when compensation was given to Vedic Scholars affected by kaveri floods. This coincides with the Saka date 1467(1545 A.D) expressed by the Kadapayaadi code “setuvandya”. Here sa = 7, ta = 6, va= 4, ya = 1.

2. Three inscriptions are found in the Padmanabhaswami temple at Trivandrum.

In the first inscription Balamartandavarman resolved to rebuild this temple. The work was started on the 29h day of month Ani in the year 904 Kollam, represented by the katapayaadi system. Here bhu = 4; na = 0; la = 9.

The 2nd inscription, that big slab stone for the orraikal mandapa reached the precincts of the fort of thandavam in the year precincts of the fort of Trivandrum in the year 906 Kollam, expressed by the katapayaadi code "*chinnidhi*". Here cha=6; na=0; dhi=9.

The 3rd inscription states that the consecrating ceremony was done in the year Kollam 908 expressed by the katapayaadi code "*janadhi"*. Here ja=8; na=0; dhi=9.

3. Srivilliputur plates of Abhirama Pandya, Saka 1474:

This record belongs to the reign of the Pandya king Abhirama Pandya. He is said to be the son of Parakrama pandya and the grandson of Abhirama Pandya. In the Saka year 1474 (1552 A.D.) denoted by the katapayadi code "*vasivandya"* (va=4, sa=7, va=4, ya=1) corresponding to the cyclic year Virodhikrit, in the Uttarayana, in the Hemantaritu, when the sun was in Makara, in the dark fortnight, on a New moon thithi, when the moon was in Sravana on the auspicious occasion of solar eclipse, Kind Abhirama made the village Kshirajanapura into an aghrahara named Parakrama Pandyapura.

1. Dalavay agraharam plates of Varatungarama Pandya, Saka 1504:
   On the Wednesday, the chaturdasi of the dark half of the month, Magha in the year Chitrabanu, Saka 1504(1582 A.D.), expressed by the katapayaadi code "*bhanurmanya"* the King Varatungarama granted in the presence of the God Vamadeva, in the temple of Karamaddesvara, the village of Muruganeri, to Chandrasekar, son of Chokkappa Pandita, a medical doctor. Here the date of the land donation made in the year Chitrabanu coincided with katapayaadi "*bhanurmanya*". Here ya=1; ma=5; na=0; bha=4.
2. Dalavay Agraharam plates Ativirarama Pandya, Saka 1517:
   In the saka year 1517(1595 A.D.), expressed by the katapayadi code "*satyamaya*" which corresponds with the 33rd year after the accession of SriVallabha, on a Monday, a punya dvadasi, of the bright half of the month of Sravana, Varsharitu, Dakshinayana of the year Durmukhi, in the Sravan Nakshatra, Subha yoga, Subha karana, the king Abhirama *alias* Ativira born in Dhanishta Nakshatra, granted at the request of Ramakrishnappa-nayaka, son of Haridasa, the village of Nadikudi,

which was divided into three parts under the name of Ativaramapuram. The village thus granted was in Pudukottai – sima. The donation was, obviously, a conformation grant made on this date. Here sa=7; ya=1;ma=5;ya=1.

3. The Tenkasi inscription of Varaguna Srivallabha. He is said to have a Yaga on the occasion of the coronation on the day expressed by the katapayaadi code as "*sugamaka*" corresponding to Saka 1537(1615 A.D.). This expression gives the meaning sacrifice. Here sa =7;ga=3; ma=5; ka=1.
4. One Sanskrit inscription at Padmanabhaswami temple at Thiruvananthapuram states that king Adityavarman *alias* Sarvanganatha constructed at Syanandura the shrine of Krishna, the *gosala, mandapa* and a *dipikagriha* on the day expressed by the katapayaadi code "*cholappriya"* corresponding to Saka 1296(1374 A.D.). Here cha=6; la=9; pha=2;ya=1.
5. Srirangam. King Ravivarman was born in the Saka year 1188 expressed by the katapayaadi code *dehavyappriya* (1266 A.D.) and the record was composed by Kavibhushana.ya =1; pa=1 ; ha=8;da=8.
6. Records that Goppana took the image of Rangabatha from Tirupathi to Chenji, his capital and after defeating the muslims restored the image to Srirangam and had it installed here with Lakshmi,Bhudevi, the consorts of the Lord. The record is dated in the Saka year 1293 expressed by the katapayaadi code "*bandhuppriya*". Here ya=1; pha=2; dha=9; ba=3.
7. A record from Srirangam registers a gift of land by Muddarasa, the minister of Virupaksha, for rearing a flower garden for the supply of garlands to the god in Saka 1305, expressed by the katapayaadi code "*manaslaghya*" during Karthikka, Paurnami, Tuesday, Krithika corresponding to 1383, November 10.Here ya=1;ga =3; na= 0; ma=5.
8. Devaraja, a pradhani of Virupana and the son of Sangamamatya is said to have made a gift on the day expressed by the katapayaadi code "*senaslaghya*" corresponding to Saka 1307(1385 A.D.).Here ya=1; ga=3; na=0; sa= 7.
9. In the record of Achyuthadeavaraya, one Kandanai, Ramanujar Ayengar endowed cash amounts for the festivities to the god Ranganatha on the day expressed by the katapayaadi code "*bhumivandya*" ya=1; va=4; ma=5; bha=4.

10. Saka 1455(1534 A.D.) is mentioned in katapayaadi code in the convention with the gift of gold provided for the offerings to god and to meet the recitation of Vedas for the meri of the King.
11. One Srirangarajan Somayaji Tirukkalikundradasan is said to have provided gold for the recitation of *Yagnavalkasmriti Asiti Bhagoriddhiyat* before the god on Srirangam on the day expressed in katapayaadi code as "*Samavedya*" corresponding Saka 1457(1535 A.D.).ya=1;va=4;ma=5;sa=7.
12. During the reign period of King Sadasivaraya, Parasarabhatta endowed a village for the offerings to the deity Srirangesa I Saka 1466 expressed by the katapayaadi code "*tatvandya*"(1544 A.D.) ya=1; va=4 ; ta=6;ta=6.
13. While referring to the construction of the yajnasala mandapa at Srirangam, it gives the date expressed in katapayaadi code *vasumatya* corresponding to Saka 1574(1652 A.D.) ya=1; ma=5; sa=7;va=4.
14. A certain Maddu Alakadri is said to have made a suyaprabha on the Saka daatea expressed by the katapayaadi code "*khanichoya*", corresponding to 1679 A.D. ya=1; cha=6; na=0; ka=1.

7.5.2 CHRONOGRAM:

Chronogram is the part of Cryptograph. Chronogram is a decode which could not understood by the ordinary layman. We have included the chronogram in all chapters. Some examples are quoted here:

i. An inscription of Pratihara Vatsaraja dated Saka 717 is expressed in chronogram as *muni(7); sasi(1); naga(7).*
ii. An inscription of Vajrahasta III (1038-70) dated *Saka* 960 is expressed by the chronogram *viyad(0)-ritu(6)-nidhi(9)* corresponding to 1038 A.D.
iii. Peddabammidi plates of Vajrahasta III, the grant was made in the Sakayear 982 is expressed by the chronogram *kara-vasu-nidhi on* Yhusday in the month of Makara corresponds to the 28th December, 1060 A.D.

iv. An inscription of Rajaraja I Devendravarman dated saka 998 is expressed by the chronogram *vasu(8)-nanda(9)-nidhi(9)* corresponding to 1077 A.D.

v. In Dasgoba plates of Rajaraja III the correct date of Kamarnava's accession to the throne in the Saka year 1069 is expressed by the chronogram *nand-artu-vyoma-chandra corresponding to 1147 A.D.*

vi. Sarngapuram grant of the time of Kakatiya Ganapati dated Saka 1176 is expressed in chronogram as *rasa-mun-isana* corresponding to 1255 A.D.

vii. A copper plate charter in Sanskrit and in Nagari script refers to the rule of Vijayanagara king Harihara, registers the grant, of the village Gjattadahalli in Sigenadu-sime to the Vedic Scholars as an agrahara dated the Saka 1308 expressed in chronogram *vasu- vyama-vahni-indu* .

viii. In Kukke (Subrahmanya) grant of madhavaraja the details of the date which are rather unusually elaborate are as follows:
Kali 4488 is expressed by the chronogram *gaj-ebh-abdhi-yuga* and Saka 1309 is expressed by the chronogram *grah-ambara-agni-sitamsu.*

ix. This inscription in Sanskrit and Kannada and in Nagari script records a gift of the villages Kadaluru, Hire Kadalur and Maidanahalli renamed Hariharapura, by the king Harihara II of Vijayanagara to the Vedic Scholars of that place. The date given in Saka year is expressed by a chronogram *Vasu(8) – chandra(1)-agni(3)-vidhu(1)* is Saka 1318, Dhatu, Sravana, lunar eclips**e.**

x. The king Visvesvara deeated the Andhra army,near sarvasiddhi,in the cyclic year Chitrabhanu,represented by the Saka year 1325 is expressed by the chronogram gati(5)- bahu(2)-sakti(3)-bhu(1).

xi. An inscription of king Visvesvara dated Saka 1329 is expressed by the chronogram nava(9) -bhanu(2) -rama(3) –sasi(1).

xii. The Sankrit verse record from Tripurantakam in Kurnool district refers mentions that king Bukkais said to have worshipped the god here is Saka 1345 expressed by the chronogram "*bana-yuga-anala-indu*" (1423 A.D.).

xiii. The inscription records that while prince Triyambaka was governing his province dated the Saka year being 1377 which is expressed by the numerical words *dhatu(7); adri (7); guna(3); bhu(1*).

xiv. In a record of Krishnaraya from Upparapalle in Cuddapah district it is stated that the Siva temple was renovated on the Saka date 1444 is expressed by the chronogram *ved(4) –abdhi(4) –yuga(4) –bhu(1).*

xv. A Sankrit record of the period of Achyuta from Hampi in Bellary district mentions the chronogram *"Chandra-rasa-amara-indra*" corresponding Saka year 1461(1539 A.D.).

xvi. According to a record from Venkayalapadu in Guntur distict, dated in the reign period of king Achyuta, the consecration ceremony of the deity Parvatanatha is said to have been performed on the day of lunar eclipse falling on the date expressed by the chronogram *akshi-rasa-sruti-indu corresponding to Saka 1462* (1540 A.D.).

xvii. A Sanskrit record in Nagari characters registers gift to the Vedic Scholars of various gothras, of the village Venkatadri-Samudra alias Honnayyanahalli by king Sadasivaraya of Vijayanagara to god Vittalesvara on the day of lunar eclipse. The record is dated Saka 1467, expressed by the chronogram *turanga –anga –veda –indu*, Visvavasu, Ashada – purnima, Saumya- vasara and lunar eclipse regularly corresponding to 1545 A.D., June 24.

xviii. A record from Sadhavatam in Cuddapah district dated Saka 1527(1605 A.D.) is expressed by the chronogram "*asva-ambaka-bana-bhu*".

xix. The Sanskrit record from Venkatareddipalem in kurnool district refers to the gift to god Chennakesava in Saka 1544 expressed by the chronogram '*veda-ambhonidhi-bana-chandra*" (1622 A.D.)

The principle of *ankaanam vamanoh gatih* i.e., the reading of the numerals from right to left was generally followed in the dates mentioned in inscriptions in word-numerals. Also we can see the ordinary enumeration of a number of words like *Dvisaptya-adhika-Siva-Sata* in which *Siva* represents *ekadasa* i.e., 11 and *Dvisaptya* meaning 72.

Although the *katapayaadi* system was popular in South India, the use of Nannadi system as seen in the usage in the west coast of Kerala cannot be ruled out for the purpose of reckoning. This has been employed in the palm leaf manuscripts in Kerala.

7.6. CONCLUSION:

The aim of this chapter is to focus the various methods of reckonings adopted in the ancient and medieval periods.

Epigraphs lend support to understand the method of dating used by the rulers and the people of the South.

Though a number of eras have been used in the stone and copper inscriptions, yet the most commonly followed dating especially in South India are the regnal years, the Kali, Kollam era, The Saka dates, the use of chronograms and the Katapayaadi system. Both in Sanskrit literature and inscriptions, the Katapayaadi system and Chronograms have been frequently mentioned, for they give clinching evidences to date the inscriptions. In order to avoid discrepancies while writing the Arabic numerals in the records, the chronograms have been mainly used. A number of instances can be cited to establish the authenticity of the records with the details of date such as Katapayaadi and chronograms.

NOTES AND REFERENCES:

[1] *Seetharaman.N,1980,The Early Cholas., pp.1-144*

[2] *Ramanatha Iyer,SII Vol XIV and introduction*

[3] *S.I I. Vol III. No: 137.*

[4] *S I I.,Vol XIX :No:131: p.18*

[5] *Ep. Ind Vol: XXI :p.167*

[6] *IPS., No: 737*

[7] *A.R.Ep., 1911, No.86 and part II, para 29, p.71*

[8] *A.R.Ep.,1907, No. 580*

[9] *Ibid., 1911,No: 86*

[10] *SII .,Vol XXIII,No:580*

[11] *Pd No:461*

[12] *JASASI., Vol. III, pp.246-254*

CHAPTER - 8

CONCLUSION

The astronomical details figuring in inscriptions from the states of Andhra, Karnataka, Kerala and Tamilnadu have plenty of scope. They figure in the record of different ruling families who ruled over the various parts of southern India. An analytical examination of the epigraphs flood of throws light on the various aspects especially the effects of the planets. It is interesting to note that the details in the records from Tamilnadu are clinching and authenticated.

Some of the epigraphs have been examined insitu to correlate the details. The astronomical details find mentioned in the inscriptions have greater value in order to fix the chronology of events. These details have been calculated with help of Indian Ephemeris.

Finding the equivalent of dates is possible only when the year, the month, the weekdays and the nakshatra are given in the inscriptions. It may be necessary to give correction to tithi or nakshatra or the cyclic year. No correction should be given to the weekday.

Inscriptions from Andhra and Tamilnadu furnish valuable information on the astronomical occurrences like *ayanas*, eclipses, conjunction of the planets as well as the month and stars. They also enable us to fix the accession of kings, the coronation date and the day of their death. The records also exhibit the fear of the people towards the evil effect of the planets. The pariharas given help us to bring about the awareness among the people.

Mathematics has to be applied judiciously and cautiously without disturbing the truth and correctness of the events furnished in the records. Astronomical data and the process of equivalent dates are put into severe strain. The astronomical data in some cases enable us to differentiate the kings of the same name because they suit only one king. In some cases where the data do not agree, attempt has been made to correct the regnal year. But the regnal year should not be corrected; the data

sometimes may require correction with respect to *tithi* or star so as to satisfy the rules followed by the Solar system. However the astronomical data are the best that are to be applied at the right place and the right time so that there is no distortion. Indian history is replete with a number of references to the occurrence of Ayanas, Eclipses, Sankramanas, and auspicious Conjunction of Planets.

Our ancestors did pay much attention to the astronomical combinations and their effects. Kings used to select such auspicious occasions for making grants to the temples and other religious institutions. We also hear of the kings being crowned on auspicious hours calculated well in advance. Special worship has been instituted on the days of Sankramana when people used to visit the temples to get the divine blessings.

From the above study it is learnt that the grants have been made on several occasions for the welfare of the king and his progeny as well as for the prosperity of the people. The grants have been made mostly in the form of cows, bullock etc, sometimes sheep, goats etc., and the pasture lands.

Tirunedungalam inscription records some gifts to the god Mahadevar of Tirunedungalam a devadana in Kavira-nadu made by a certain Bala Vayarruar-Kilavan kirtti Ayiravan. One of them was the gift of 61 cows to provide for the daily bathing of the image of the god at noon by panchagavya; The second was the gift of 7 cows to provide for bathing the same image with ghee on sankaranti days and to burn a lamp during the period of such bathing ceremonies; the third was the gift of 45 sheep to provide for the burning during day time daily, a nanda lamp; and the fourth was the gift of a bell-metal standing lamp,(nilai-vilakku) for this purpose.

The main aim of donating the cows and bullocks is for the purpose of breeding as the result of which there is growth and development of the cow's family. As a result of the increase of cows population, more milk is produced. The milk and its products are used daily in the temples for various purposes.

There is also an increase in the revenue to the state exchequer. To mark the various auspicious occasions and to observe the ayanas eclipses etc., the perpetual

lamps have been instituted. Besides these the purpose of donating for the maintenance of perpetual lamps is to compensate the sins committed and to ward of the evil effects of the planets. Land grants are restricted while making grants on these occasions on account of the fact that they are liable for sale, mortgage, and thereby allowing them to lie-fallow.

Above all the donations have been made on the occasions of eclipses and ayanas not only for the maintenance of perpetual lamps and food offerings but also towards the construction of the temple, the repairs in addition to the temple as well as for conducting festivities, etc. The grants have been made as parihara or for the merit, worship, offerings and for the feeding of Vedic Scholars, for watcher and wages, maintenance of mathas, as Vidyadana, to mark the pilgrimage and celebrate the victory in wars and so on.

The Kukche inscription of Satyavakya-Permanadi is very important with respect to the day of astronomical significance quoted in the record. According to this record the full moon day occurs falls on the day of the star Magha in Simha sign when the Sun enters Kumbha rasi. In this record the month itself is called Magha named after the Tamil calendar. It is on account of the Tamil influence; over Kannada inscriptions the astronomical details are quoted in a peculiar way. In this record, the day when Sun enters Kumbha is the full moon day. i.e. Kumbha sankranti falling on a full moon day.

The study of the inscriptions from Tamil Nadu and Kerala may throw light on the significance of the astronomical conjunction of planets while making grants. On observation we find that astronomical occurrence are given more in coastal area than in other places, considering the auspicious occasion while making grants near to water bodies like rivers, ocean etc., the reason being the resultant effects of the scorching Sun was felt in the coastal areas particularly during the season of the Ayanas.

These records also enable us to fix the accession of kings, the coronation date and the day of their death. The religious beliefs that the rulers had, can be understood

from the mode of their compensation paid by them. The records also exhibit the fear of the people towards the evil effect of the planets.

Importance has been given to the dates quoted in the form of chronograms. To cite an example, it may be said that rulers like Amma II have chosen the occasion of Uttarayana as the day of his coronation. This date is given in the chronogram as giri-rasa-vasu samkhyabde-saka-samaye (Saka 867=945 A.D.).The other astronomical combination will suit this occasion are given as the 13th day of dark far night in the month of Margashirsha, and Thursday on the day of Maithra (Anuradha) nakshatra while the Sun was in Dhanush in the Ghata-Lagna.

The king had chosen this auspicious occasion not only for the crowning ceremony but also for the grant of the village Maliyapundi free from taxes to the tenants of Kammanadu. This grant was made to meet the expenses of the repairs of breaks and cracks, offerings, worships etc., and of an alms-house (satra).

In contrast to Uttarayana, Dakshinayana is considered as the period of uncertainties. Uttarayana represents a period of merry and prosperity irrespective of the system of recurring. The celebrations of Dasara festival and Deepavali festival marks the glory of Dakshinayana. The Sun crosses the lowest point in its course and begins its northward journey culminating on the day of Sankranti which marks the Harvest festival. In Dakshinayana the monsoon starts in full form and the agriculture marks the commencement of operation in full swing.

On the day of lunar-eclipse, the sun, the moon and the earth are at the point of maximum stress and represent the culmination of events as a catalyst from which only dramatic change can come based on what has already been experienced .All fall within the range of two decades. This helps us to understand not only to count his regnal years but also the sanctity attached by the king for making grants.

The Eastern Chalukyan rulers adopted the Amanta Chaitra Sukla which represents the Telugu new year's day as the first day of each regnal year and the whole of the luni-solar year in which the accession or at any rate the coronation of any particular king took place was counted as the first year of his reign. His second year

was calculated as to begin from the Chaitra sukla 1 coming after his coronation or accession.

Inscriptions from Pudukkottai region speak very little about the festivities and the observance of *ayanas*. Many of these inscriptions record the benefactions made to the temple for the purpose of worship and offerings and for the feeding of the Vedic Scholars. Since Pudukkottai region being a dry belt in Tamilnadu people depend mainly on rain water sources. The greenery is much less seen. In spite of a few records throw light on the festivity, the *ayanas*. The festivities that are celebrated are directly related to the astronomical combination or on the days of a particular constellation or the occurrence of planets.

In Kerala, inscriptions speak of the Jupiter's movement. An elaborate study has been taken up in order to explore the Jupiter's cycle with respect to its position in 12 rasis. Grants have been made in Kerala during the time of Jupiter's movement. It may be pointed out that the rulers paid more importance to the Jupiter movement.

The Western Ganga plates refer to the importance was given to the occasion like Ayanas and eclipses.

It may be inferred that the Karnataka rulers paid importance to astronomical occasions while making the land grants. We have come to know from the inscriptions from Mysore and Mandya district that several ruling families have made liberal donations to the temple on the days of the eclipses, Ayanas, Sankranti etc.,

The grants from Tamilnadu have been made to celebrate different type of festivals like Sivaratri, Ramanavami Gokulashtami and so on. There are instances to know about the endowment of lands to the temples on festive occasions and to the provision made for meeting the expenses of the feeding of Vedic Scholars on such occasions. It may be said that the people took interest in the observance of eclipses, Sankranti and other auspicious occasions.

Further the epigraphs of Karnataka supply valuable information on eclipses, Uttarayana, Dakshinayana and festivals like Sivaratri and Uttanadvadesi etc. The

dates on which these auspicious occasions occur have been worked out mathematically from the detail of dates furnished in the record. From a study of the records from Karnataka, Andhra and Tamilnadu intoto we come to know that the importance has been given to astronomical occurrences more in Andhra than in Karnataka. The declining trend can be seen towards Tamilnadu. This indicates the religious fervor of the ruling king and its leaning towards a particular religion.

Also it may be suggested that on account of urbanization process astronomical significance have been set aside in Tamilnadu where as in Karnataka the urbanization process has not gained momentum and an account of which the auspicious occasions like Ayanas, eclipses etc have been observed to a great extent. People of Karnataka had more faith and therefore religious ceremonies have been observed for the welfare of the people.

The astronomical occurrences have been observed in Andhra more scrupulously not only at the time of the coronation ceremony but also on the dates of the consecration ceremony of the deities in the temples. People have followed the movement of the planets while making grants because they have been taken to be the auspicious occasions to observe the ceremonies and rituals.

The transit of Pisces (Mina sani) occurred has resulted in the severe famine that made the people free from that place.

Also it is true that the conjunctions of the planets have been considered as significant auspicious occasions by the Tamil people. The festivities and the observance of astronomical occasions in Andhra and Tamilnadu resulted in conducting festivals and the growth of different cult deities.

A detailed study of the observances of astronomical features in Maharashtra and the states in the north will definitely add to our knowledge of astronomy and its scope. It is necessary to find the interaction between the Southern and Northern states with respect to the attachment towards astronomical occurrences. A cumulative effect of this study will certainly be a forerunner for the national and social integration.

APPENDIX-I

Epigraphical evidences to find the weekday:

The weekly system of reckoning the days came into practice at much later days. Epigraphs mention the weekdays. The evidence of the first use of 7 days in a week figures in early records inscriptions.

The seven day week is followed the ruling of successive days by the planetary gods after which the days of the week were named ,took the following pattern the first day being shown as Saturday. Divide the day into 24 hours and assume that these bodies are the rulers of successive hours in cyclic order. Then the day is named after the ruler of the first hour.

----------Saturday ----------

Hours	1	2	3	4	5	6	7	8.....14	15....21	22	23	24	25(1)
Gods													
Watching	1	2	3	4	5	6	7	1.....7	1....7	1	2	3	4
	(Saturn)												(Sun)

----------Sunday ----------Monday

Hours	1	2	3	4	5....11	12.....18	19.....24	25(1)
Gods								
Watching	4	5	6	7	1.....7	1.....7	1.....6	7
	(Sun)							(Moon)

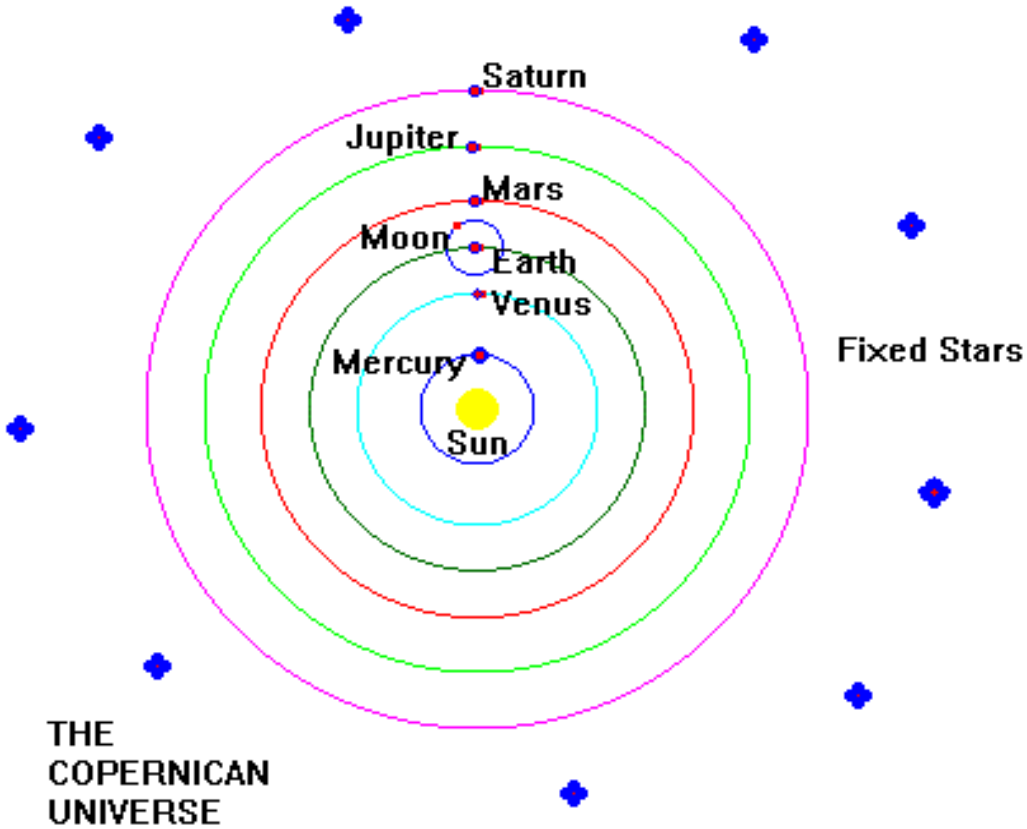
It would be seen from the above illustrative chart that the serial numbers of the planetary Gods that rule at the start of the day rotate on the order of 1,4,7,3,6,2,5.This is in A.P mod 7.Here first no 1 and the common difference is 3. This mean that the planetary Gods Saturn, Sun, Moon, Mercury, Jupiter, and Venus lord over the days in rotation, giving the present sequence of weekdays of Sani, Ravi,

Soma, Mangala, Budha,Vrihaspati,and Sukra. The corresponding English names of these weekdays are Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday and Friday.

One theory is as follows:

If you order the "planets" according to either their presumed distance from earth (assuming the earth to be the center of the Universe) or their period of revolution around the Earth, you arrive at this order Moon, Mercury, Venus, Sun, Mars, Jupiter and Saturn.

Fig. A1.1 The Copernican Universe



Now ,assign (in reverse order) these planets to the hours of the day:

1 = Saturn, 2 = Jupiter, 3 = Mars, 4 = Sun, 5 = Venus, 6 = Mercury, 7 = Moon, 8 = Saturn, 9 = Jupiter. etc., 23 = Jupiter, 24 = Mars.

Then next day will then continue where the old day left off:

1 = Sun, 2 = Venus, etc., 23 = Venus, 24 = Mercury and the next day will go 1 = Moon, 2 = Moon, 2 = Saturn, etc.

If you look at the planet assigned to the first hour of each day, you will note that the planets come in this order: Saturn, Sun, Moon, Mars, Mercury, Jupiter, Venus. This is exactly the order of the associated week days. Order of the Solar system is preserved in the weekdays. This representation is Universal and followed by the people of the world. But they have different representation for the years, Eras, month, and dates.

APPENDIX-II

Coding theory and Katapayaadi codes and Chronograms in inscriptions:

The aim of this chapter is to highlight the various methods of reckonings adopted in the ancient and medieval periods. For this study, inscriptional records lend support to understand the system of ancient dating used by the rulers and the people of the South. Though a number of eras have been used in the stone and copper inscriptions, yet the most commonly followed dating especially in South India are the regnal years, the Kali, Kollam era, The Saka dates, the use of chronograms and the Katapayadi system. Both in Sanskrit literature and inscriptions, the Katapayaadi system and Chronograms have been frequently mentioned, for they give clinching evidences to date the inscriptions. In order to avoid discrepancies while writing the Arabic numerals in the records, the chronograms have been mainly used. A number of instances can be cited to establish the authenticity of the records with the details of date such as Katapayadi and chronograms.

Katapayaadi System:

"Katapayaadi" is an ancient method for memorising oft-used numbers, by converting them into words or word-clusters. Vararuchi, the great grammarian is the proponent of this technique, very widely used by Namboothiris. Letters in the "ka" and "ta" groups represent the digits from 1 to 9, while in the "pa" group, the first five letters signify numbers 1 to 5. Similarly, letters from "ya" to "la" also signify numbers 1 to 9. In compound letters, the final letter should be taken into consideration. Letters "na", "nja" and the vowels not attached to any consonant too indicate zero (0).

Example: ka, kaa, ki, kku, ska = 1 Numbers are reckoned in the reverse order. For example, the numbers for the word "khagam" are 2 and 3; the resultant number will be 32. Again, take "taralaangam" : 6 2 9 3

The number in the reverse order should be taken, i.e., 3 9 2 6

"kula": 1, 3 -> 31 (u attached to a consonant)
"ula" : 0, 3 -> 30 (u unattached to a consonant = 0)

Since ka, ta, pa, ya stand for 1, the system got the name "katapayaadi". The system came to be used widely in India and particularly in Kerala. As it is easy to indicate numbers like 28 using words like "hari", "dwaaram" and "dukkham", it is used to incorporate numbers into verses. It is also convenient to remember that by subtracting "taralaangam" from the Kali year, the year in Malayalam Era can be calculated. It is more difficult to remember the numbers 3926 than the word it represents, namely, "taralaangam".

This system can be used for historical periodisation which has been illustrated. The word is aayuraarogyasoukhyam". It is said to indicate the day in the Kali Era. This date can be derived in the following manner:

"aayuraarogyasoukhyam"	aa	yu	raa	ro	gya	sou	khyam
	0	1	2	2	1	7	1
In the reverse order	1	7	1	2	2	1	0

Thus, the day in the Kali era on which the work was completed 1712210

Between Medam and Medam 365 days, 6 hours and 12 minutes

or 365days, 6 1/5hours
or 365 days + (31) / (5 x 24) days
= 365 + (31 / 120) days

Divide the Kali day with this number to get the year in the Kali era:

The year in the Kali era in which the work was completed =1712210/(365+(31/120))

= 4687 years, 244 days

Subtract 3926 from this to get the year in the Malayalam era

Date in Malayalam era =(4867-3926)years,244days =761years,244days or the 244th day in the year 762 in Malayalam era (since year 0 to 1 is counted as 1,

and not 0) Starting from the Malayalam month Medam through Tulam, one gets (31+31+32+31+31+30+30) = 216 days (& 244 - 216 = 28) This means that the work was completed on the 28th day of the month Vrischikam in the year 762 of the Malayalam era. It is said that the first day in the Kali era was a Friday. So, if the remainder is 1 after dividing the number in Kali era by 7, then it was a Friday. Now, the number 1712210 divided by 7 yields a remainder of 3, and hence the day of the week must have been a Sunday. Therefore, it is clear that the "katapayaadi" system has historical value also. The reading of the numbers once decoded is done in the reverse order according to the rule mentioned as *ankanam vamatogatih.* This means the numbers are read from right. If this be the case, it would naturally means that the left most syllable will be represented by the number in the right most place.

Chronograms:

Chronogram is the part of Cryptograph. Chronogram is a decode which could not understood by the ordinary layman. We have included the chronogram in all chapters. We have decoded the chronogram using the following tables which an ordinary layman could not be understood.

Table A2.1

Chronogram for zero (Sunya)

Kha	**Gagana**	**Ambara**
Abhra	Vuyat	Nabhas
Antariksha	Vishnupada	Akasa
Ananta	Vyoman	Dyu
Purna	Vindu	Sunya

Table A2.2

Chronogram for one

Adi	**Sasin**	**Indu**	**Vidhu**
Sitamsu	Sitarasmi	Soma	Sassanka
Kshapesvara	Atrinayanaja	Mriganka	Chandramas
Ajha	Rasmi	Rupa	Chandra
Pitamaha	Nayaka	Tanu	Sudhamsu

Table A2.3

Chronogram for two

Yama	**Yamala**	**Yugala**	**Daya**
Dvanda	Asvin	Nasatya	Dasra
Lochana	Netra	Akshi	Drishti
Chakshus	Nayana	Ikshana	Ambaka
Banu	Kara	Karna	Kucha

Table A2.4

Chronogram for three

Rama	**Guna**	**Triguna**	**Loka**	**Jagat**
Trijagat	Agnni	Vahni	Pavaka	Vaisvanara
Dahana	Tapana	Udarchis	Hutasana	Jvalana
Sikhin	Krishanu	Hotr	Anala	Kala
Trikala	Trigata	Trinetra	Haranaryana	Sankarakshi

Table A2.5

Chronogram for four

Veda	**Sruti**	**Sagara**	**Arnava**	**Bandhu**
Amburaai	Abdhi	Jaladhi	Jalanidhi	Koshtha
Ambhonidhi	Varinidhi	Ambhudhi	Jalasaya	Vyuha
Sindhu	Varidhi	Kendra	Varna	Gostana
Asrama	Yuga	Turya	Krita	Purushartha

Table A2.6

Chronogram for five

Bana	**Sar**	**Sayaka**	**Ishu**	**Lavana**
Vishika	Kalamba	Margana	Bhuta	Mahayajna
Mahabhuta	Parvan	Prana	Pandava	Tattva
Artha	Vishaya	Indriya	Ratna	Tata
Rudrasya	Pallava	Gavya	Mahapapa	Suta

Table A2.7

Chronogram for six

Rasa	**Kaya**	**Darsana**	**Raga**	**Ari**
Ritu	Karaka	Tarka	Sastra	Ripu
Masardha	Kumarasya			

Table A2.8

Chronogram for seven

Hills=Naga	**Aga**	**Bhubhrit**	**Parvata**	**Saila**
Rishi	Mahidhara	Bhudhara	Giri	Adri
Muni	Atri	Vara	Svara	Dhatu

Table A2.9

Chronogram for eight

Vasu	**Ahi**	**Naga**	**Gaja**	**Dantin**
Digganja	Hastin	Matanga	Kunjara	Dvipa
Sarpa	Takshan	Siddhi	Bhuti	Yama

Table A2.10

Chronogram for nine

Anka	**Nanda**	**Nidhi**	**Nidhana**	**Randhra**
Randhra	Chodra	Dvara	Graha	Go
Aja	Ratna	Varsha	Brihati	Pavana

Table A2.11

Chronogram for ten

Dis	**Disa**	**Asa**	**Kakubh**	**Anguli**
Pankti	Ravansiras	Avatara	Lakara	Rudra
Siva	Isvara			

For example:

Srirangam : While describing the ten avatars of Vishnu, gold has been endowed to various deities by Kanarachyuta in Saka 1489 expressed by the chronogram *nidh-ibha-abdhi-chandra* corresponding to 1567 A.D. It was an eclipse of the moon this day when purnima occurs.

The following table is to find the Christian year from Katapayadi code:

Table A2.13

Katapayadi Code	Spliting of Kadapayaadi	Saka year	Kollam year	Christian year
Dehavyapriya	ya =1; pa=1 ;ha=8;da=8.	**1188**		1266 A.D
Bandhupriya	ya=1;pha=2;dha=9;ba=3.	1293		1371 A.D
Cholapriya	cha=6;la=9;pha=2;ya=1.	1296		1374 A.D
Manaslaghya	ya=1;ga=3;na=0; ma=5.	1305		1383 A.D
Senaslaghya	ya=1; ga=3; na=0; sa= 7.	1307		1385 A.D
Samavedya	ya=1;va=4;ma=5;sa=7.	1457		1535 A.D
Tatvandya	ya=1; va=4 ; ta=6;ta=6.	1466		1544 A.D
Setuvandya	sa=7, ta= va= 4, ya = 1.	1467		1545 A.D
Chinnidhi	cha=6; na=0; dhi=9.		**906**	
Janadhi	ja=8; na=0; dhi=9.		908	
Vasivandya	va=4, sa=7, va=4, ya=1	1474		1552 A.D
Bhanurmanya	ya=1;ma=5;na=0;bha=4.	1504		1582 A.D
Satyamaya	sa=7;ya=1;ma=5;ya=1.	1517		1595 A.D
Sugamaka	sa=7;ga=3;ma=5;ka=1.	1537		1615 A.D
Vasumatya	ya=1; ma=5; sa=7;va=4.	1574		1652 A.D
Khanichoya	ya=1;cha=6; na=0; ka=1.	1601		1679 A.D.

APPENDIX -III

The procedure for finding the weekday

1. Subtract 1442 from the saka year (elapsed) of the required date.
2. Divide the remainder by 11.The quotient is called cakra(cycles) ≡ C
3. Multiply the remainder (obtained in (2) by 12 and to the product add the number of lunar months elapsed counting Caitra as 1.The sum thus obtained is called Mean lunar months ≡ M.
4. Number of Adhikamasas = $\frac{M+2C+10}{33}$ (take the quotient)
5. True lunar months = mean lunar months + No. of adhikamasas = M + INT $\left[\frac{M+2C+10}{33}\right]$ c TM
6. Mean ahargana ≡ MAH = [{(True lunar months)} × 30 + {No. of tithis elapsed}} = [(TM×30) + (TI) + $\frac{C}{6}$] (where TI = No. of tithis elapsed in the given lunar month)
7. Ksaya dinas = INT [$\frac{1}{64}$ (Mean ahargana)] = INT [$\frac{1}{64}$ (MAH)] = KD i.e. take the quotient of $\frac{1}{64}$ (MAH)
8. Civil days ≡ TAH = Mean ahargana – Ksaya dinas
   = MAH - KD ≡ MAH - of $\frac{1}{64}$ (MAH)
9. However, since the average values of the various parameters are considered in the above computations, one day may have to be either added to or subtracted from TAH in (8) to get the actual ahargana.
   The following is the c program to get the weekday using the above procedure:

C PROGRAM TO FIND THE WEEKDAY

The following is the c program to find the weekday when the date, month, saka year, thiti are given

```
 #include <stdio.h>

void main()

{

int dt, mt, yr,c,r, m, tm, mah, kd, tah,s1,r1,amas,wd,thiti;

printf("\n enter the date, month,year,thiti : ");

scanf("%d %d %d %d",&dt,&mt,&yr,&thiti);

/*printf("\n enter the month : ");

scanf("%d",&mt);*/

/*printf("\n enter the year : ");

scanf("%d",&yr);*/

/* subtract from the year */

s1 = yr - 1442;

c = s1 / 11;

m = r1 * 12 + 1;

amas = (m + 2*c + 10) / 33;

tm = m + amas;

mah = tm * 30 + (thiti - 1) + c/6;

kd = mah / 64;

tah = mah - kd;
```

```
wd = 5*c + tah;
r = wd % 7;
if(r==0)
{
printf("the day is monday");
 }
if (r==1)
{
printf("the day is Tuesday");
}
if (r==2)
{
printf("the day is wednesday");
}
if (r==3)
{
printf("the day is Thursday");
}
if (r==4)
{
printf("the day is Friday");
}
```

```
if (r==5)
{
printf("the day is Saturday");
}
if (r==6)
{
printf("the day is Sunday");
}
getch();
}
```

For example:

In a set of copper plate grant from Nanjangud it is stated that king Rajamalla II crowned his son Ereyanga the ruler in the Saka year 826, Marga-sira, Paurnami,Sunday,and the eclipse correspond to 904 A.D., November 25, **Sunday.**

Here we have to subtract one from TAH to get the actual weekday Sunday.

In the record of Chola king from Rajahmundry dated Saka 1071(= 1148 A.D.,) it is mentioned that on the day of solar eclipse Somana son of Datyana-Peggada gifted a perpetual lamp to god Virabhadresvara. In the year Sukla, there was no Solar eclipse. In the year Vibhava, there was a eclipse which occurred in the month of Chaitra equivalent to 1148 A.D., April 20, **Tuesday.**

A record of Rajendra Billakongalva from his capital at Molate dated Saka 1175, [Sri] mukha, ardhodaya-grahana. In the given year a solar eclipse occurred on **Monday**, 22nd April 1253 A.D. The grant was given to the temple of Amritesvara.

The outputs for the above data using the above c program are

```
 enter the date,month,year,thiti :25 11 826 14
the day is Monday
 enter the date,month,year,thiti :20 4 1071 0
the day is Tuesday
 enter the date,month,year,thiti :22 4 1175 0
the day is Monday
```

Similarly we can find the weekday for all datas given in the inscriptions.

APPENDIX- IV

Comparison of date of the inscriptions with Saros Series date

Lunar Eclipse:

Table A4.1

Inscription date	Year	King	Lunar Eclipse Saros Series date			
4th Sep	955 A.D	Rajakesari varman	96, Mar 11	101, Sep 4		
Jul-03	977 A.D	Rachamalla IV	98, Jan 08	103, July 03	108, Dec 28	
Oct 19,	1138 A.D	Ananthavarmadeva	88, Apr 26	93, Oct 20		
Dec-21	1154 A.D	Kulottunga Choda Gonkaraja	101, Jan 01	106, Jun 27	111, Dec 21	
7th Sep	1177 A.D	Hoysala Ballala II	80 , Mar 16	118, Apr 14	85, Sep 09	123, Oct 09
July 28,	1208 A.D.	Trivantakam Mahadeva	101, Feb 03	106 , July 29		
Jul-18	1209 A.D	Hoysala Viraballala II	111, Jan 22	116, July 18	83, Dec 13	
Jan-02	1219 A.D.,	Narasimha II	102, Jan 2	107, June 29	112, Dec 22	
April 6.	1232 A.D	Hoysala Narasimha II	90, April 6	95, October 1		
Sep 19.	1252A.D	Hoysala Ballala	110 ,Mar 27	115, Sep 19		
July 20.	1255 A.D	Chief Gangayya-sahini	102, Jan 24	107, Jul 21		

Inscription date	Year	King	Lunar Eclipse Saros Series date			
Nov-01	1259 A.D.	Kumara Ganapatideva Maharaja	109, May 08	114, Nov 1		
Jan-03	1265 A.D.,	Gandapendaru Meyidevaraja,	93, Jan 3	98, Jun 30	103, Dec 24	
15th Feb	1272 A.D	Hoysala Narasimha III	92, Feb 15	97, Aug 10		
18th May	1277 A.D	Hoysala Narasimha III	109, May 18	114, Nov 12		
Jan 14,	1283 A.D	Amari Nendu	93, Jan 14	98, Jul 11		
Oct-02	1297 A.D	Kakatiya king	91, Apr 9	96, Oct 2		
Jan-26	1320 A.D	Pratapa –rudradeva	103, Jan 26	108, Jul 20		
Dec 4.	1378 A.D	Haribara II	110, Jun 11	115, Dec 4		
July 22.	1385 A.D	Vijayanagara king Harihara	104, Jan 27	109, Jul 22		
21st July	1396 A.D	Harihara II	110, Jun 21	115, Dec 15		
Nov-05	1500 A.D	Gajapati	103, May 13	108, Nov 6		
Sep-25	1512 A.D	Krishnaraya	114, Ap 1	119, Sep 25		
July 25.	1515 A.D.	Krishnaraya	106, Jan 30	111, Jul 25		
13th July	1516 A.D	Krishnadevaraya	116, Jan 19	121, Jul 13		
Sep-16	1521 A.D	Achyutaraya	95, Mar 23	100, Sep 16	138, Oct 15	

Inscription date	Year	King	Lunar Eclipse Saros Series date			
June 24.	1545 A.D.,	Sadasivaraya	122, Jun 24	127, Dec 18		
Mar-23	1559 A.D	Sadasivaraya	115, Mar 23	120, Sep 16		
Oct-28	1566 A.D	Gonibida-sime	114, May 4	19, Oct 28		

Solar eclipse:

Table A4.2

Inscription Date	Year	King	Saros Series date for Solar Eclipse			
Feb-05	1049 A.D.,	Rajathiraja I	Feb 5, 86;	Mar 6, 124	Aug 1, 91	
Jun-20	1061A.D.	Somesvara I	June 20, 102;	Dec 14, 107		
Sep 2	1141A.D.	Hoysala Vishnuvardhana	Mar 10, 106;	sep 2 111		
21st April	1167 A.D	Hoysala Narasimha I	Apr 21, 115;	Oct 14, 120		
Aug-24	1188 A.D.,	Viraballala	Feb 29, 107;	Aug 24, 112		
January 28th	1199 A.D	Hoysala Viraballala deva (II)	Jan 28, 108;	Jul 24, 113		

Inscription Date	Year	King	Saros Series date for Solar Eclipse			
December 9,	1322 A.D		June 15, 116;	Dec 9, 121;		
Apr-03	1326 A.D	Pratapa-Rudradeva	Apr 3 , 118;	Sep 26, 123		
Apr-26	1408 A.D.,	Devaraya-maharaya	Apr 26, 109;	Oct 19, 114		
2nd February	1432 A.D	Devaraya(II),	Feb 2, 131;	June 27, 98 ;	July27, 136;	Dec 22, 103
March 7	1513 A.D.,	Krishnadevaraya	Mar 7, 112;	Aug 30, 117		
Nov-12	1528 A.D,	Kakilapalraju	Mar 18, 120;	Nov 12, 125		
Mar-29	1530 A.D	Achyutaraya	Mar 29, 102;	Apr 27, 140;	Sep21, 107	
Nov-02	1556 A.D.	Sadasivaraya-maharaya	May 9, 111;	Nov 2, 116		

The above tables infer that the dates of the inscriptions correlate with the date specified in the saros series.

BIBLIOGRAPHY

PRIMARY SOURCES:

1. Annual Report on Indian Epigraphy
2. South Indian Inscriptions
3. Inscriptions of Pudukkottai State
4. Inscriptions of Western Gangas
5. Travancore Archaeological series
6. Epigraphia Indica
7. Epigraphia Carnatica
8. Ancient sciences and Archaeological Society of India
9. Andhra Historical Research Society

SECONDARY SOURCES:

1. Prof. K.A.Nilakanta Sastri,'the Colas', second edition, 1955
2. Prof K.A.Nilakanta Sastri,' History of South India', Oxford University
3. Sircar. D.C, 'Indian Epigraphy, New Delhi, 1965
4. Sircar, D.C,' Indian Epigraphical glossary', New Delhi, 1966
5. V. Thiruvenkatachary, "Popular Astronomy", S. Chant and co.pvt. Ltd. New Delhi 1962
6. V. Thiruvenkatachary, K.S.V.S. Narasimhan, and K.C. Mathew, 'Astronomy' S. Chant and co.pvt. Ltd. New Delhi
7. Balachandra Rao.S 'Indian Astronomy'-A Primer, 2008
8. Balachandra Rao.S, "Indian Astronomy" An introduction, Hyderabad 2000
9. Subbarayalu .O.S," The Political geography of Chola country", Madras, 1973
10. A.Appadurai," Economic conditions in south India" Chennai, 1936
11. N.Seethuraman, ' Medieval Panyas", Kumbakonam, 1980
12. N.Seethuraman," Early Cholas" Mathematics Reconstructs The Chronology Kumbakonam,1980

13. T.V. Mahalingam,"South Indian polity, Chennai, 1967
14. L.D.Swamikanuppillai, Indian Ephemeris"
15. Professor Hermann Jacobi ' The computation of Hindu dates in inscriptions'
16. Commodore S.K. Chaterjee , Indian Calendar System, New Delhi,1998
17. Balachandra Rao.S and Dr.Padmaja Venugopal, 'Eclipses in Indian Astronomy' Bangalore, 2008

LIST OF PUBLICATIONS

1. "Astronomical significance behind making grants" in Journal of the Ancient Sciences and Archaeological society of India Vol.III .230-236
2. " Astronomical significance noticed in Kerala inscriptions" in Journal of the Ancient Sciences and Archaeological society of India Vol.IV.Pp.188-195
3. "Astronomical significance of inscriptions while making grants (Karnataka inscriptions)" in Journal of the Ancient Sciences and Archaeological society of India Vol.V Pp.88-97
4. An abstract in V Annual National Conference on Ancient Sciences and Archaeology .Pp.35

Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya

(University u/s 3 of UGC Act 1956 – Accredited with "B" Grade by NAAC)

Enathur, Kanchipuram 631561

http://www.kanchiuniv.ac.in

Course Work Completion Certificate for Ph.D Scholars

1. Name of the Research Scholar: V. RAMAMANI
2. Enrolment Number: RM12MA19
3. Department: MATHEMATICS
4. Broad Area of Research: ASTRONOMY
5. Tentative Topic of Research: ASTRONOMICAL SIGNIFICANCE OF INSCRIPTIONS WHILE MAKING GRANTS
6. Name and address of the Guide: Dr. N. PANKAJA
   D.133, 22nd CROSS,
   VIJAYANAGARA III STAGE,
   MYSORE.

It is certified that the Scholar has completed one semester (90 working days) of Course Work under my Supervision as per the regulations of the university.

The process of conducting Research Methodology Examinations I&II / Research Methodology Examination II as the scholar is exempted from Research Methodology I for the scholar may be initiated / The scholar is exempted from both Research Methodology Examinations as per the First Doctoral Committee Meeting (Strike which ever not applicable)

Date

N. Pankaja

Signature of the guide

(Dr. N. PANKAJA)
M.Sc., M.Phil., Ph.D., P.G.D.C.A.,
Professor and Head (Retd.)
Dept. of Mathematics
Sri Parasakthi College for Women
COURTALLAM

C. No. 0147

श्री चन्द्रशेखरेन्द्रसरस्वती विश्वमहाविद्यालयः

(विश्वविद्यालयानुदानायोगस्य १९५६ नियमे तृतीयविधिमनुसृत्य संस्थापितः विश्वविद्यालयः)

SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHAVIDYALAYA

(University established under Section 3 of U.G.C. Act 1956)

ENATHUR, KANCHIPURAM - 631 561, Tamil Nadu, India.

STATEMENT OF MARKS

Ph.D. RESEARCH METHODOLOGY EXAMINATIONS

Name: **V. RAMAMANI**	Register No.: **RM12MA19**
Month & Year of Exam: **APRIL-2012**	Branch: **MATHEMATICS**
Research Area: **ASTRONOMICAL SIGNIFICANCE OF INSCRIPTIONS WHILE MAKING GRANTS**	

S.No.	Title of the Paper	Marks Secured	Passing Minimum	Maximum Marks	Result
1.	**Research Methodology – I**	**EXEMPTION**			
2.	**Research Methodology – II**	79	50	100	**PASS**

OFFICE OF THE CONTROLLER OF EXAMINATIONS
7 JAN 2013
S.C.S.V.M.V. UNIVERSITY

Assistant Registrar

Controller of Examinations

CURRICULUM VITAE

RAMAMANI V

BF 3, Mithra block, Agrini Complex, Andalpuram, Madurai - 625003

Cell: 9443550238 Email: vramamani@yahoo.co.in

OBJECTIVE:

To contribute my full knowledge in the area of mathematics and astronomy by obtaining a Doctoral Researcher in the project titled “Astronomical Significance....” and proves the importance in the existence of analytics in all our traditional and divine practices from our ancient times till date.

PERSONAL PROFILE

Proactive, hardworking and active researcher

Experienced in working independently

Strong in analytics and Vedic

Ability to relate the ancient texts and scripts with the subject and explaining the same

Teaching experience for more than 30 years and public speaking experience

EDUCATION

Currently pursuing my PhD in Mathematics

BRIEF SUMMARY:

As an aspiring Doctoral degree holder I have a strong and a successful academic background deeply grounded in the area of Mathematics with a special interest in algebra. Have always topped in all exams during my school and college days. Being a proud alumnus of TVS Lakshmi Matriculation Higher Secondary

school, BSc. Mathematics from Meenakshi College, Madurai and MSc. from Madura College, Madurai and M.Phil., form Madurai kamaraj university, Madurai. .currently I am a successful Associate professor in Sourashtra College, Madurai with more than 30 year of experience who have handled thousands of students and have been a witness of the success of my own students. Grown with the teaching of Hindu philosophies and practices, the value system is engrossed within me that help me drive both my professional and family life with an equal balance.

Parallel to the experience as Associate Professor I have qualified with further Post Graduate Diplomas such as PGDCA, PGDOR, and one Certificate Course CGT and now into my PhD.

QUALIFICATIONS: MSc., MPhil., PGDCA., PGDOR., CGT., Aspiring PhD. RESEARCH INTERESTS

My main interest remains in the field of Mathematics with a special involvement of Astronomy, Astrology Ancient History, Epigraphy, Geography, as the projects is build to compare all these in justifying the significance in making grants during various occurrences in the past. This interesting combination of areas in the main thread of my favourite Mathematics I investigate and compare various inscriptions and analysed the collected data particularly in the states of southern India to prove the significance in making the grants. Since Astronomy is a part of Mathematics this create multiple effect of learning in all the above mentioned area which also proves Mathematics is not something that deals only with Numbers, symbols and numerals.

ACHIEVEMENTS AND MILESTONES

ACADEMIC

- 30 years of experience in Teaching Mathematics to both UG and PG students at Sourashtra College, Madurai
- Specially qualified in handling computer papers as part of Mathematics

- Participated in seminars of the department of mathematics both within and external organisations
- Only professor identified by the college management to handle Value education for the college students

ADMINISTRATION

- Have been a chief examiner in the Madurai Kamaraj university and also been a part of evaluation, and invigilating examinations at both college and university
- Responsibility for leading a team of teachers or students or both in planning and organising a various conferences and events
- Experienced in report writing and writing up research work
- Experience of external examiner in computer papers for all colleges under MKU
- Set Question papers on various mathematics areas for many colleges.

SKILLS

- Analytical skills
- Communication Skills
- Best teaching skills
- Computer language skills

IT

- Very good in Computer languages like C, C++, Pascal
- Good knowledge in all Microsoft applications
- Been an all rounder in the college and a beloved teacher for all students.

CONFERENCES ATTENDED

- National conferences in Melkote -2009
- Sastra University Tanjore – 2010 & 2012
- Tumkur University 2011;
- One International Conference in IIIT, Bangalore – 2009 and Published Papers in Archaeological Society and Ancient Science of India.

ASTRONOMICAL SIGNIFICANCE OF INSCRIPTIONS WHILE MAKING GRANTS

Thesis Submitted in Partial fulfillment of the

Degree of Doctor of Philosophy (Ph.D.)

By

V. RAMAMANI

Reg.No: RM12MA19

Under the Guidance of

Dr. N. PANKAJA

DEPARTMENT OF MATHEMATICS

Faculty of Science

SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHAVIDYALAYA

(University established under section 3 of UGC act 1956)

ENATHUR, KANCHIPURAM - 631 561.

NOVEMBER 2017

CHAPTER - 8

CONCLUSION

The astronomical details figuring in inscriptions from the states of Andhra, Karnataka, Kerala and Tamilnadu have plenty of scope. They figure in the record of different ruling families who ruled over the various parts of southern India. An analytical examination of the epigraphs flood of throws light on the various aspects especially the effects of the planets. It is interesting to note that the details in the records from Tamilnadu are clinching and authenticated.

Some of the epigraphs have been examined insitu to correlate the details. The astronomical details find mentioned in the inscriptions have greater value in order to fix the chronology of events. These details have been calculated with help of Indian Ephemeris.

Finding the equivalent of dates is possible only when the year, the month, the weekdays and the nakshatra are given in the inscriptions. It may be necessary to give correction to tithi or nakshatra or the cyclic year. No correction should be given to the weekday.

Inscriptions from Andhra and Tamilnadu furnish valuable information on the astronomical occurrences like *ayanas*, eclipses, conjunction of the planets as well as the month and stars. They also enable us to fix the accession of kings, the coronation date and the day of their death. The records also exhibit the fear of the people towards the evil effect of the planets. The pariharas given help us to bring about the awareness among the people.

Mathematics has to be applied judiciously and cautiously without disturbing the truth and correctness of the events furnished in the records. Astronomical data and the process of equivalent dates are put into severe strain. The astronomical data in some cases enable us to differentiate the kings of the same name because they suit only one king. In some cases where the data do not agree, attempt has been made to correct the regnal year. But the regnal year should not be corrected; the data

sometimes may require correction with respect to *tithi* or star so as to satisfy the rules followed by the Solar system. However the astronomical data are the best that are to be applied at the right place and the right time so that there is no distortion. Indian history is replete with a number of references to the occurrence of Ayanas, Eclipses, Sankramanas, and auspicious Conjunction of Planets.

Our ancestors did pay much attention to the astronomical combinations and their effects. Kings used to select such auspicious occasions for making grants to the temples and other religious institutions. We also hear of the kings being crowned on auspicious hours calculated well in advance. Special worship has been instituted on the days of Sankramana when people used to visit the temples to get the divine blessings.

From the above study it is learnt that the grants have been made on several occasions for the welfare of the king and his progeny as well as for the prosperity of the people. The grants have been made mostly in the form of cows, bullock etc, sometimes sheep, goats etc., and the pasture lands.

Tirunedungalam inscription records some gifts to the god Mahadevar of Tirunedungalam a devadana in Kavira-nadu made by a certain Bala Vayarruar-Kilavan kirtti Ayiravan. One of them was the gift of 61 cows to provide for the daily bathing of the image of the god at noon by panchagavya; The second was the gift of 7 cows to provide for bathing the same image with ghee on sankaranti days and to burn a lamp during the period of such bathing ceremonies; the third was the gift of 45 sheep to provide for the burning during day time daily, a nanda lamp; and the fourth was the gift of a bell-metal standing lamp,(nilai-vilakku) for this purpose.

The main aim of donating the cows and bullocks is for the purpose of breeding as the result of which there is growth and development of the cow's family. As a result of the increase of cows population, more milk is produced. The milk and its products are used daily in the temples for various purposes.

There is also an increase in the revenue to the state exchequer. To mark the various auspicious occasions and to observe the ayanas eclipses etc., the perpetual

lamps have been instituted. Besides these the purpose of donating for the maintenance of perpetual lamps is to compensate the sins committed and to ward of the evil effects of the planets. Land grants are restricted while making grants on these occasions on account of the fact that they are liable for sale, mortgage, and thereby allowing them to lie-fallow.

Above all the donations have been made on the occasions of eclipses and ayanas not only for the maintenance of perpetual lamps and food offerings but also towards the construction of the temple, the repairs in addition to the temple as well as for conducting festivities, etc. The grants have been made as parihara or for the merit, worship, offerings and for the feeding of Vedic Scholars, for watcher and wages, maintenance of mathas, as Vidyadana, to mark the pilgrimage and celebrate the victory in wars and so on.

The Kukche inscription of Satyavakya-Permanadi is very important with respect to the day of astronomical significance quoted in the record. According to this record the full moon day occurs falls on the day of the star Magha in Simha sign when the Sun enters Kumbha rasi. In this record the month itself is called Magha named after the Tamil calendar. It is on account of the Tamil influence; over Kannada inscriptions the astronomical details are quoted in a peculiar way. In this record, the day when Sun enters Kumbha is the full moon day. i.e. Kumbha sankranti falling on a full moon day.

The study of the inscriptions from Tamil Nadu and Kerala may throw light on the significance of the astronomical conjunction of planets while making grants. On observation we find that astronomical occurrence are given more in coastal area than in other places, considering the auspicious occasion while making grants near to water bodies like rivers, ocean etc., the reason being the resultant effects of the scorching Sun was felt in the coastal areas particularly during the season of the Ayanas.

These records also enable us to fix the accession of kings, the coronation date and the day of their death. The religious beliefs that the rulers had, can be understood

from the mode of their compensation paid by them. The records also exhibit the fear of the people towards the evil effect of the planets.

Importance has been given to the dates quoted in the form of chronograms. To cite an example, it may be said that rulers like Amma II have chosen the occasion of Uttarayana as the day of his coronation. This date is given in the chronogram as giri-rasa-vasu samkhyabde-saka-samaye (Saka 867=945 A.D.).The other astronomical combination will suit this occasion are given as the 13th day of dark far night in the month of Margashirsha, and Thursday on the day of Maithra (Anuradha) nakshatra while the Sun was in Dhanush in the Ghata-Lagna.

The king had chosen this auspicious occasion not only for the crowning ceremony but also for the grant of the village Maliyapundi free from taxes to the tenants of Kammanadu. This grant was made to meet the expenses of the repairs of breaks and cracks, offerings, worships etc., and of an alms-house (satra).

In contrast to Uttarayana, Dakshinayana is considered as the period of uncertainties. Uttarayana represents a period of merry and prosperity irrespective of the system of recurring. The celebrations of Dasara festival and Deepavali festival marks the glory of Dakshinayana. The Sun crosses the lowest point in its course and begins its northward journey culminating on the day of Sankranti which marks the Harvest festival. In Dakshinayana the monsoon starts in full form and the agriculture marks the commencement of operation in full swing.

On the day of lunar-eclipse, the sun, the moon and the earth are at the point of maximum stress and represent the culmination of events as a catalyst from which only dramatic change can come based on what has already been experienced .All fall within the range of two decades. This helps us to understand not only to count his regnal years but also the sanctity attached by the king for making grants.

The Eastern Chalukyan rulers adopted the Amanta Chaitra Sukla which represents the Telugu new year's day as the first day of each regnal year and the whole of the luni-solar year in which the accession or at any rate the coronation of any particular king took place was counted as the first year of his reign. His second year

was calculated as to begin from the Chaitra sukla 1 coming after his coronation or accession.

Inscriptions from Pudukkottai region speak very little about the festivities and the observance of *ayanas*. Many of these inscriptions record the benefactions made to the temple for the purpose of worship and offerings and for the feeding of the Vedic Scholars. Since Pudukkottai region being a dry belt in Tamilnadu people depend mainly on rain water sources. The greenery is much less seen. In spite of a few records throw light on the festivity, the *ayanas*. The festivities that are celebrated are directly related to the astronomical combination or on the days of a particular constellation or the occurrence of planets.

In Kerala, inscriptions speak of the Jupiter's movement. An elaborate study has been taken up in order to explore the Jupiter's cycle with respect to its position in 12 rasis. Grants have been made in Kerala during the time of Jupiter's movement. It may be pointed out that the rulers paid more importance to the Jupiter movement.

The Western Ganga plates refer to the importance was given to the occasion like Ayanas and eclipses.

It may be inferred that the Karnataka rulers paid importance to astronomical occasions while making the land grants. We have come to know from the inscriptions from Mysore and Mandya district that several ruling families have made liberal donations to the temple on the days of the eclipses, Ayanas, Sankranti etc.,

The grants from Tamilnadu have been made to celebrate different type of festivals like Sivaratri, Ramanavami Gokulashtami and so on. There are instances to know about the endowment of lands to the temples on festive occasions and to the provision made for meeting the expenses of the feeding of Vedic Scholars on such occasions. It may be said that the people took interest in the observance of eclipses, Sankranti and other auspicious occasions.

Further the epigraphs of Karnataka supply valuable information on eclipses, Uttarayana, Dakshinayana and festivals like Sivaratri and Uttanadvadesi etc. The

dates on which these auspicious occasions occur have been worked out mathematically from the detail of dates furnished in the record. From a study of the records from Karnataka, Andhra and Tamilnadu intoto we come to know that the importance has been given to astronomical occurrences more in Andhra than in Karnataka. The declining trend can be seen towards Tamilnadu. This indicates the religious fervor of the ruling king and its leaning towards a particular religion.

Also it may be suggested that on account of urbanization process astronomical significance have been set aside in Tamilnadu where as in Karnataka the urbanization process has not gained momentum and an account of which the auspicious occasions like Ayanas, eclipses etc have been observed to a great extent. People of Karnataka had more faith and therefore religious ceremonies have been observed for the welfare of the people.

The astronomical occurrences have been observed in Andhra more scrupulously not only at the time of the coronation ceremony but also on the dates of the consecration ceremony of the deities in the temples. People have followed the movement of the planets while making grants because they have been taken to be the auspicious occasions to observe the ceremonies and rituals.

The transit of Pisces (Mina sani) occurred has resulted in the severe famine that made the people free from that place.

Also it is true that the conjunctions of the planets have been considered as significant auspicious occasions by the Tamil people. The festivities and the observance of astronomical occasions in Andhra and Tamilnadu resulted in conducting festivals and the growth of different cult deities.

A detailed study of the observances of astronomical features in Maharashtra and the states in the north will definitely add to our knowledge of astronomy and its scope. It is necessary to find the interaction between the Southern and Northern states with respect to the attachment towards astronomical occurrences. A cumulative effect of this study will certainly be a forerunner for the national and social integration.